NP3050/3030

SERVICE MANUAL
(for 220/240V)

REVISION 2 OCT. 1991

Canon
FY8-13BK-020

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I. FEATURES

1. Front loading and minimal machine space.

The copier is constructed so that paper is loaded into the cassettes and the deck from the front, enabling a compact design.

2. Super fine toner (single-component) for high resolution.

Development of images by the single-component projection method promises stable copy quality, and super fine particles give enhanced resolution.

3. Full range of basic features.

- The copies may be reduced / enlarged between 50% and 200% in the zoom mode; in addition, they may be reduced / enlarged at four fixed reproduction ratios each.
- The copies may be as large as A3 / Ledger or as small as a postcard in size; further, a wide variety of paper materials may be used including tracing paper and OHP.
- The copies may be either of four colors; i.e., red, blue, green, or brown. (NP3050 only)
- Although compact in design, the copier has a duplexing unit, thanks to its set-back mechanism. (NP3050 only)
- In addition to the above, the copier is equipped with mechanisms that enable automated copying work; i.e., auto paper selection, auto reproduction, ratio selection, and auto exposure control (AE).

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II. SPECIFICATIONS

A. Construction

Body	Desktop
Copyboard	Fixed
Light source	Halogen lamp 330 W (230V model)
Lens	Zoom
Photosensitive medium	OPC

B. Type

Copying		Indirect electrostatic
Charging		Corona
Exposure		Slit (moving light source)
Copy density adjustment		Automatic (AE) or Manual
Development		Dry (projection)
Pick-up	Automatic	2 cassettes + 2 cassettes (option) or paper decks (option)
	Manual	Manual feed tray
Transfer		Corona
Separation		Corona (electrostatic)
Cleaning		Blade
Fixing		Heat roller (910W,230V)

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C. Performance

Document type			Sheet, Book, 3-D object (2 kg/4.4 lb.. max.)
Document size (max.)			A3 (297 x 420 mm)/LDG (11" x 17")
Reproduction ratio			DIRECT, Fixed (Table 1-1), ZOOM (50% to 200%)
Wait time			3 min or less (20°C/68°F); if warm-up is set to 175°C 2 min 10 sec or less (20°C/68°F); if warm-up is set to 145°C
First copy			7 sec or less (A4/LTR)
Continuous copying			99 max.
Copy speed			See Table 1-2.
Copy size			A3 (297 x 420 mm)/LDG (11" x 17") max. Postcard (100 x 148 mm/3.9" x 5.8") min.
Copy paper type	Cassette		Plain paper (64 to 80 g/m^2), Tracing paper (SM1), Colored paper
	Manual feed tray		Plain paper (64 to 128 g/m^2), Tracing paper (SM1, GNT80), Colored paper, OHP film, Postcard, Label sheet
	Two-sided/Overlay copy (NP3050 only)	Automatic	Plain paper (64 to 128 g/m^2), Tracing paper *Up to 20 copies if A4, B5, or Letter; 1 copy if A3, B4, LDG etc. (from 128.5mm to 297mm in feeding direction from 297mm to 431.8mm in crossfeeding direction)*
		Manual	Plain paper (64 to 128 g/m^2), Colored paper, OHP film (overlay only), Postcard
Cassette			w/ Claw, Front loading, 25 mm deep (about 250 sheets of 80 g/m^2)
Copy tray			100 sheets (approx.; 80 g/m^2)
Non-image width			2.5 ± 1.5 mm / 0.1 ± 0.06 in. (leading edge) 2.0 ± 1.0 mm / 0.08 ± 0.04 in. (left/right)
Auto clear			Available (2 min standard; may be varied in asterisk mode between 1 to 9 min in 1-min increment; may also be disabled)
Auto shut-off			Available (2 hr. standard; may be disabled in service mode)
Options			Stapler Sorter-A1, Stapler Sorter-B1, Sorter-B1, Finisher 3, ADF-A1, RDF-B1, RDF-B1 Editor (I), Image Editing Unit-A1, Cassette Feeding Unit-E1, Paper Deck Pedestal-D1, Paper Deck Pedestal-E1, Control Card V, CD Unit

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D. Others

		NP3050	NP3030
Operating conditions	Temperature	15°C to 30°C / 59°F to 89°F	
	Humidity	5% to 80%	
	Atmospheric pressure	0.6 to 1 atm	
Power supply	230V 50 Hz	Serial No.	
		PCE xxxxx, PCF xxxxx PCG xxxxx RCH xxxxx, RCJ xxxxx RCK xxxxx UCL xxxxx, UCM xxxxx UCN xxxxx	PEQ xxxxx REQ xxxxx UEQ xxxxx PFC xxxxx RFC xxxxx UFC xxxxx
Power consumption	Maximum	1.5kW or less	
	Copying	0.693 kW/h (ref. only)	
	Standby	0.168 kW/h (ref. only)	
Noise	Copying	71 dB or less ('POWER SOUND LEVEL' measurement; ISO)	
	Standby	50 dB or less ('POWER SOUND LEVEL' measurement; ISO)	
Ozone (average over 8 hr.)		0.1 ppm or less	
Dimensions	Width	775 mm / 30.5 in.	
	Depth	665 mm / 26.2 in.	
	Height	623 mm / 24.6 in.	
Weight		90 kg / 198 lb (approx.)	82.5kg/182 lb (approx.)
Consumables	Copy paper	Keep wrapped to protect against humidity.	
	Toner	Keep away from sunlight and keep at 40°C, 85% or less.	
	CD unit	Keep in box or pedestal; avoid sunlight, and keep at 30°C, 85% or less	

(2R2E)

DIRECT	REDUCE	ENLARGE
1 : 1 (± 0.5%)	1 : 0.500 (± 1.0%) 1 : 0.707 (± 1.0%)	1 : 1.414 (± 1.0%) 1 : 2.000 (± 1.0%)

(4R4E)

DIRECT	REDUCE	ENLARGE
1 : 1 (± 0.5%)	1 : 0.500 (± 1.0%)	1 : 1.154 (± 1.0%)
	1 : 0.707 (± 1.0%)	1 : 1.224 (± 1.0%)
	1 : 0.816 (± 1.0%)	1 : 1.414 (± 1.0%)
	1 : 0.865 (± 1.0%)	1 : 2.000 (± 1.0%)

Table 1-1 Fixed Reproduction Ratios

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Reproduction ratio		Copy size	copies/min
DIRECT	1 : 1 (± 0.5%)	A3 (297 x 420mm) A4 (210 x 297mm) B4 (257 x 364mm) B5 (182 x 257mm)	17 31 19 30
REDUCE	1 : 0.707 (± 1.0%)	A3 → A4R B4 → B5R	22 24
	1 : 0.816 (± 1.0%)	B4 → A4R	22
	1 : 0.865 (± 1.0%)	A3 → B4 A4 → B5	18 30
ENLARGE	1 : 1.414 (± 1.0%)	A4R → A3 B5R → B4	18 18
	1 : 1.224 (± 1.0%)	A4R → B4	20
	1 : 1.154 (± 1.0%)	B4 → A3 B5 → A4	18 24

Table 1-2 Copying Speed

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E. Editor (NP3050 only)

Area specification size (effective)	297 x 432 mm
Area specification accuracy	±1.0 mm (editor only; excludes input error by pen or others)
Input	Pen; input confirmed by beep.
Area specification	3 areas max. by diagonal points
Image editing	Framing, Blanking, 2-Color
Power supply	5 V (from copier)
Weight	3kg / 6.61 lb.
Dimension	555 (W) x490 (D) x 43 (H) mm / 219 (W) x 193 (D) x 1.7 (H)in

F. Cassette Feeding Unit-E1

Paper size	Same as copier.
Power supply	24 VDC (from copier)
Dimensions	705 (W) x 576 (D) x 334 (H) mm / 27.8 (W) x 22.3 (D) x 13.2 (H) in
Weight	34.5 kg / 76.06 lb. (including 2 cassettes)

G. Paper Deck Pedestal-D1

Paper size	A4, B5 ,Letter
Power supply	24 DC (from copier)
Dimensions	702.5 (W) x 575 (D) x 335.4 (H) mm /27.7 (W) x 22.6 (D) x 13.2 (H) in
Weight	42 kg / 92.60 lb.

H. Paper Deck Pedestal-E1

Paper size	A4, B5 ,Letter
Power supply	24 DC (from copier)
Dimensions	705 (W) x 576 (D) x 334 (H) mm / 27.8 (W) x 22.3 (D) x 13.1 (H) in
Weight	31 kg / 68.34 lb.

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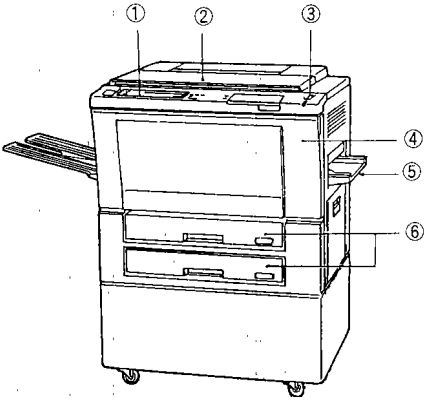
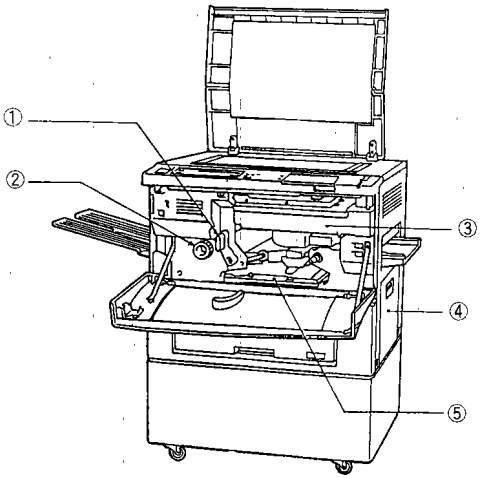
III. NAME OF PARTS

A. External View



① Control panel
② Copyboard cover
③ Power switch
④ Front door
⑤ Manual feed tray
⑥ Cassettes

Figure 1-1



① Feeder assembly release lever
② Fixing assembly knob
③ Hopper
④ Right door
⑤ Lower feeder assembly (NP3050 only)

Figure 1-2

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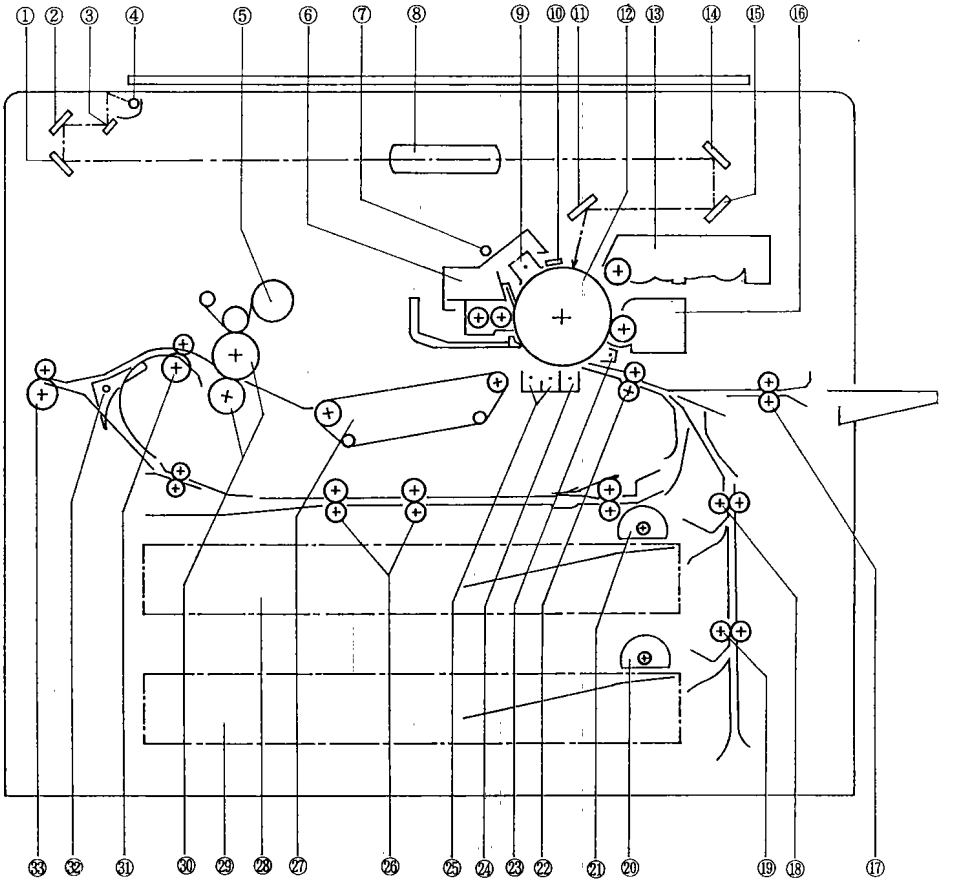
B. Cross Section

1. Copier Body (NP3050)



① No. 3 mirror
② No. 2 mirror
③ No. 1 mirror
④ Scanning lamp
⑤ Cleaning belt
⑥ Cleaning assembly
⑦ Pre-exposure lamp
⑧ Zoom lens
⑨ Primary corona assembly
⑩ Blank exposure lamp
⑪ No. 6 mirror
⑫ Photosensitive drum
⑬ CD unit
⑭ No. 4 mirror
⑮ No. 5 mirror
⑯ Developing assembly (black)
⑰ Manual feed pick-up roller
⑱ Vertical path roller 1
⑲ Vertical path roller 2
⑳ Cassette 2 pick-up roller
㉑ Cassette 1 pick-up roller
㉒ Registration roller
㉓ Pre-transfer corona assembly
㉔ Transfer corona assembly
㉕ Separation corona assembly
㉖ Set-back roller
㉗ Feeder assembly
㉘ Cassette 1
㉙ Cassette 2
㉚ Fixing roller
㉛ Delivery roller 1
㉜ Deflector plate
㉝ Delivery roller 2

Figure 1-3a (NP3050)

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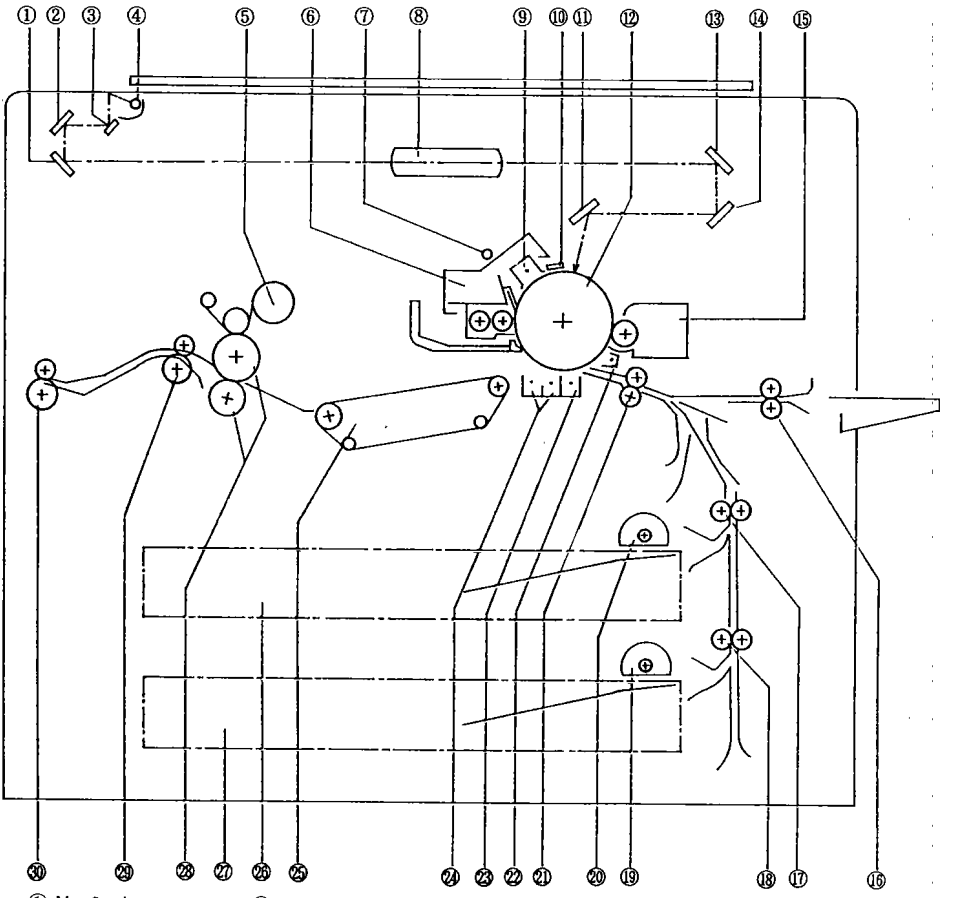
Copier Body (NP3030)



① No. 3 mirror
② No. 2 mirror
③ No. 1 mirror
④ Scanning lamp
⑤ Cleaning belt
⑥ Cleaning assembly
⑦ Pre-exposure lamp
⑧ Zoom lens
⑨ Primary corona assembly
⑩ Blank exposure lamp
⑪ No. 6 mirror
⑫ Photosensitive drum
⑬ No. 4 mirror
⑭ No. 5 mirror
⑮ Developing assembly (black)
⑯ Manual feed pick-up roller
⑰ Vertical path roller 1
⑱ Vertical path roller 2
⑲ Cassette 2 pick-up roller
⑳ Cassette 1 pick-up roller
㉑ Registration roller
㉒ Pre-transfer corona assembly
㉓ Transfer corona assembly
㉔ Separation corona assembly
㉕ Feeder assembly
㉖ Cassette 1
㉗ Cassette 2
㉘ Fixing roller
㉙ Delivery roller 1
㉚ Delivery roller 2

Figure 1-3b (NP3030)

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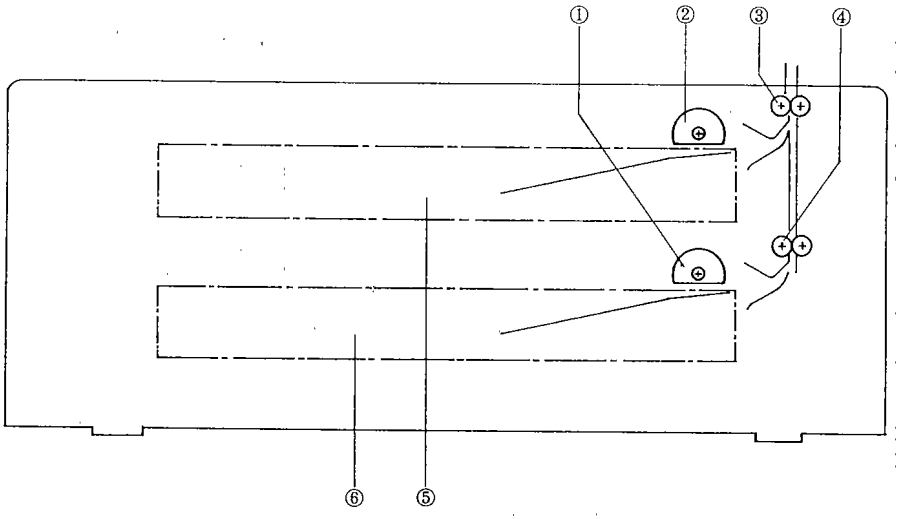
2. Cassette Feeding Unit-E1



① Cassette 4 pick-up roller
② Cassette 3 pick-up roller
③ Vertical path roller 3
④ Vertical path roller 4
⑤ Cassette 3
⑥ Cassette 4

Figure 1-4

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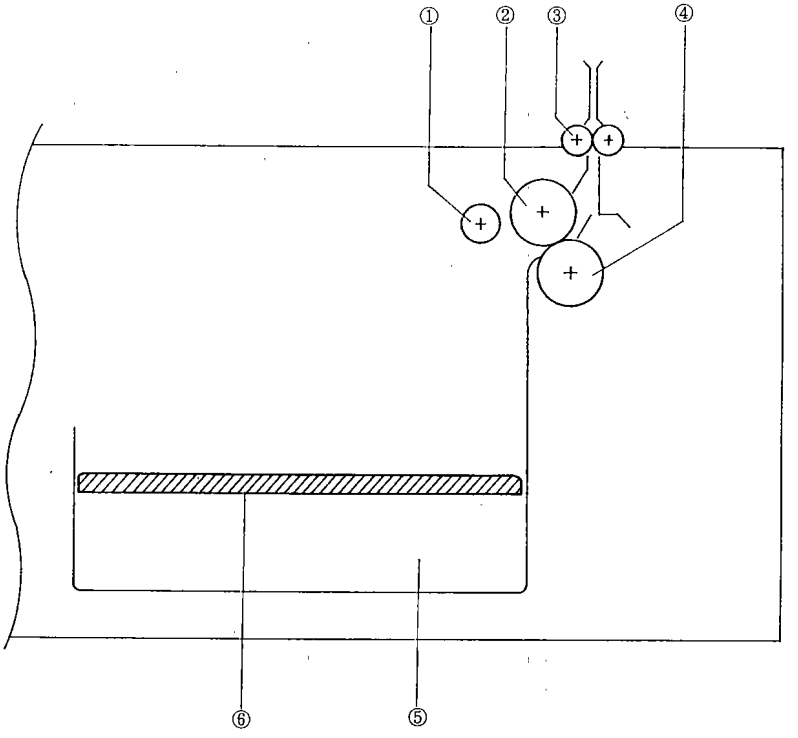
3. Paper Deck Pedestal-E1



① Pick-up roller
② Feeder roller
③ Deck registration roller
④ Separation roller
⑤ Deck
⑥ Lifter

Figure 1-5

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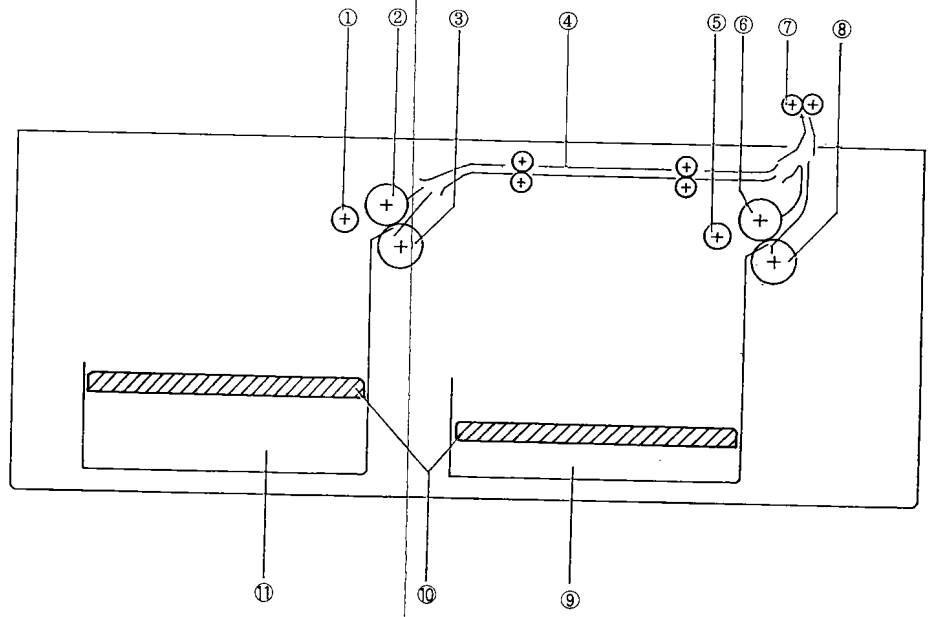
4. Paper Deck Pedestal-D1



① Pick-up roller (left deck)
② Feeder roller (left deck)
③ Separation roller (left deck)
④ Left feeder assembly
⑤ Pick-up roller (right deck)
⑥ Feeder roller (right deck)
⑦ Deck registration roller
⑧ Separation roller (right deck)
⑨ Right deck
⑩ Lifter
⑪ Left deck

Figure 1-6

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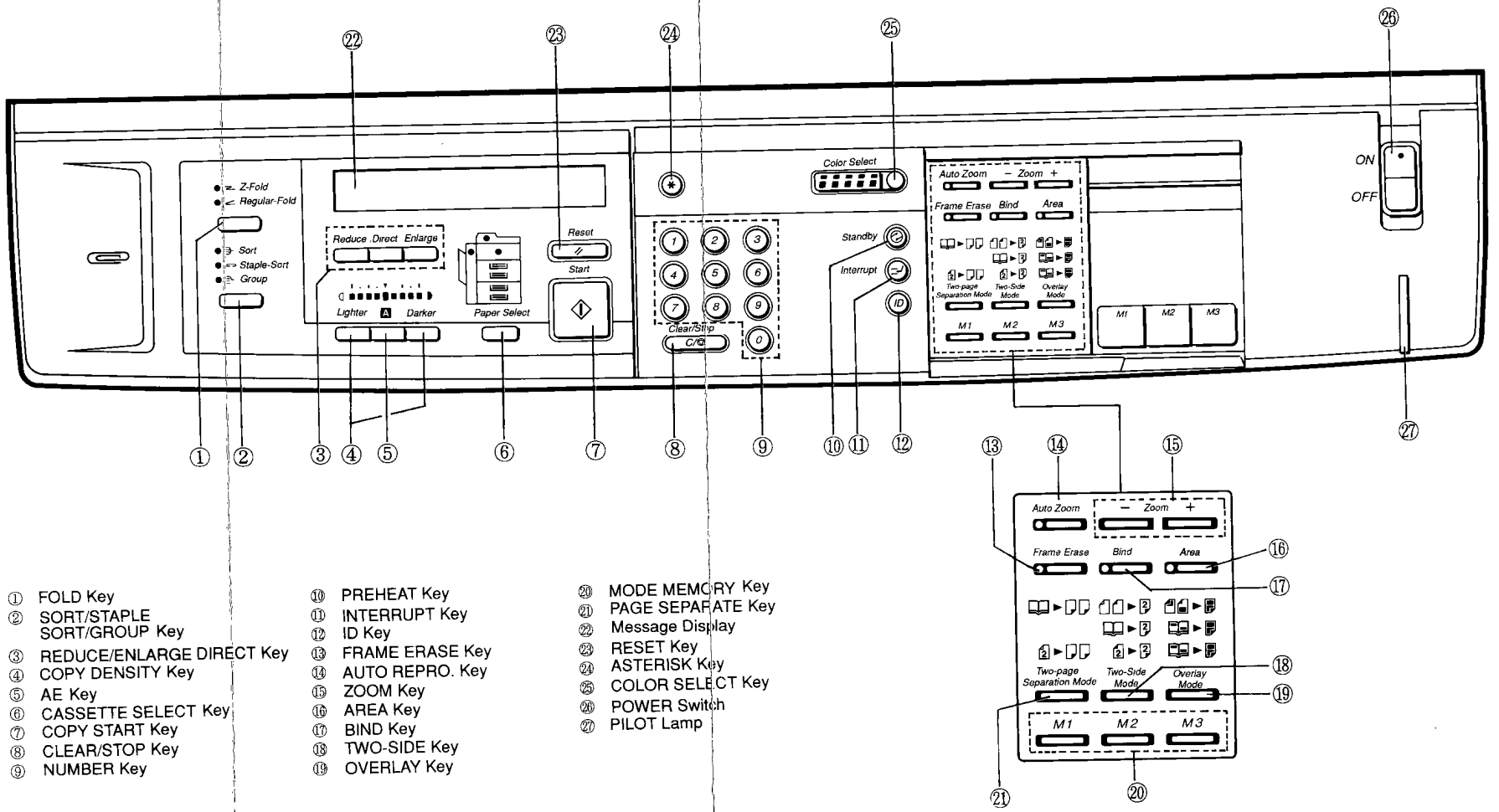
IV. OPERATION

A. Control Panel (NP3050)



① FOLD Key
② SORT/STAPLE SORT/GROUP Key
③ REDUCE/ENLARGE DIRECT Key
④ COPY DENSITY Key
⑤ AE Key
⑥ CASSETTE SELECT Key
⑦ COPY START Key
⑧ CLEAR/STOP Key
⑨ NUMBER Key
⑩ PREHEAT Key
⑪ INTERRUPT Key
⑫ ID Key
⑬ FRAME ERASE Key
⑭ AUTO REPRO. Key
⑮ ZOOM Key
⑯ AREA Key
⑰ BIND Key
⑱ TWO-SIDE Key
⑲ OVERLAY Key
⑳ MODE MEMORY Key
㉑ PAGE SEPARATE Key
㉒ Message Display
㉓ RESET Key
㉔ ASTERISK Key
㉕ COLOR SELECT Key
㉖ POWER Switch
㉗ PILOT Lamp

Figure 1-7a

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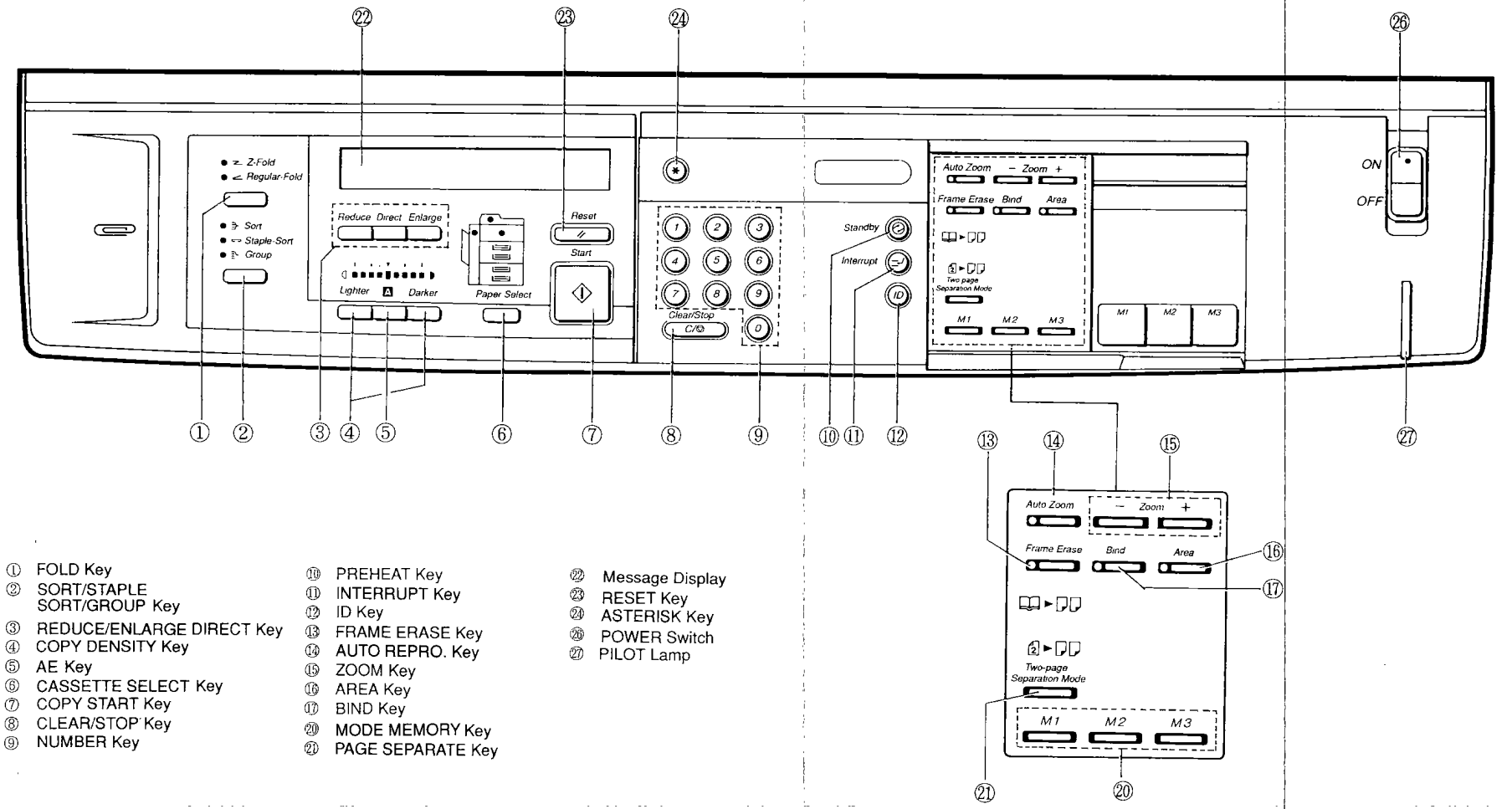
Control Panel (NP3030)



① FOLD Key
② SORT/STAPLE SORT/GROUP Key
③ REDUCE/ENLARGE DIRECT Key
④ COPY DENSITY Key
⑤ AE Key
⑥ CASSETTE SELECT Key
⑦ COPY START Key
⑧ CLEAR/STOP Key
⑨ NUMBER Key
⑩ PREHEAT Key
⑪ INTERRUPT Key
⑫ ID Key
⑬ FRAME ERASE Key
⑭ AUTO REPRO. Key
⑮ ZOOM Key
⑯ AREA Key
⑰ BIND Key
⑳ MODE MEMORY Key
㉑ PAGE SEPARATE Key
㉒ Message Display
㉓ RESET Key
㉔ ASTERISK Key
㉖ POWER Switch
㉗ PILOT Lamp

Figure 1-7b

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Guide to Control Panel

Ref.	Key	Description	Remarks
1	FOLD Key	Use it to select Z-fold mode or half-fold mode.	
2	SORT/STAPLE SORT/GROUP Key	Use it to select sort mode, staple/sort mode, or group mode. (sort mode is effective only when sorter or RDF is attached; staple/sort mode is effective only when staple sorter or finisher is attached; group mode is effective only when sorter is attached.)	
3	REDUCE/ENLARGE/ DIRECT Key	Use it for enlarged or reduced copies (within fixed reproduction ratios); also, use to return to DIRECT (100%)	
4	COPY DENSITY Key	Use it to adjust the copy density manually.	
5	AE Key	Use it to enable or disable the AE mode.	
6	CASSETTE SELECT Key	Use it to select auto paper selection or to select a cassette (paper deck)	If both cassettes contain paper of the same size, the upper cassette will be given priority; the deck, if any, is given top priority.
7	COPY START Key	Use it to start copying.	
8	CLEAR/STOP Key	Use it to reset the copy count; use it to clear numerical inputs (mode settings).	
9	NUMBER Key	Use it to set the copy count or enter numerical input.	
10	PREHEAT Key	Use it to enable or disable the preheat mode	controlled to 180 °C
11	INTERRUPT Key	Use it to interrupt on-going copying.	
12	ID Key	Use it to set the ID mode.	
13	FRAME ERASE Key	Use it to enable or disable the frame erasing mode (7 mm along the sides).	
14	AUTO REPRO. Key	Use it to enable or disable the auto ratio mode.	
15	ZOOM Key	Use it to set a reproduction ratio between 50% and 200% in 1% increment.	
16	AREA Key	Use it to specify an area together with the numeric keypad.	
17	BIND Key	Use it to enable or disable the binding mode (10, 15, or 20 mm).	
18	TWO-SIDED Key	Use it when making two-sided copies from one-sided documents, two-page separation/overlay copies, or two-sided copies from two-sided documents.	Effective when RDF is attached.
19	OVERLAY Key	Use it when making overlay copies, two-page separation/overlay copies, or two-page separation color/overlay copies.	
20	MODE MEMORY	Use it to store copy modes (3 modes max.); press it to recall any of the stored copy modes.	
21	PAGE SEPARATE Key	Use it to select two-page separation mode or two-sided/two-page separation mode.	Effective when RDF is attached.
22	Message display	Standard Screen displays reproduction ratio, selected paper size, and copy count. Service Mode Screen control panel displays service mode settings; use the keys on the control panel for input of data.	
23	RESET Key	Use it to return to the standard copy modes; i.e., DIRECT (100%), 1 copy, auto paper selection*, black, and AE*.	*Settings are as designated in service mode.
24	ASTERISK Key	Use it to select asterisk mode.	
25	COLOR SELECT Key	Use it to select a color; black, red, blue, green or brown.	

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B. Basic Copying Operation

1) Switch the copier ON.
   ① The WAIT indicator will glow green.
   ② The wait time is about 3 min (20 °C).

Note:

The automatic start mode may be activated during the wait period; see p.1-15.

2) Set the document on the RDF's document tray; or, open the RDF, and place the document face down along the size index.
3) Press the DIRECT, REDUCE, ENLARGE, or ZOOM key as desired.
4) Select the cassette to specify the paper size if necessary.
5) Set the copy density.
   ① To make copies in the AE mode, press the AE key, and check that A indicator goes ON.
   ② To make copies in the manual mode, use the copy density key: for darker copies, press the DARKER key to move the indicator to the right; for lighter copies, press the LIGHTER key to move the indicator to the left.

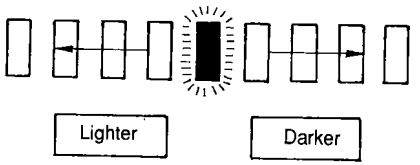

Figure 1-7a

6) Set the copy count (1 to 99) using the numeric keypad, and check the count on the copy count indicator.
   ① If the count cannot be set or to correct a mistake, press the CLEAR / STOP key, and start again.
7) Press the COPY START key.
   ① The documents set on the RDF' s document tray will be picked up automatically and copied.
   ② Copies will be made in specified numbers.
   ③ The copy mode cannot be changed between the first and last copies; all keys except the CLEAR / STOP key, the INTERRUPT key, and the COPY DENSITY key are disabled.
   ④ During copying, the density control mechanism may be switched from automatic to manual; however, it cannot be switched from manual to automatic.

Note:

If the copies are too dark in the AE mode, press the COPY DENSITY key while making copies until the density is as desired.

   ⑤ To stop the operation during continuous copying, press the CLEAR / STOP key; the operation will stop after finishing the ongoing copy run.
   ⑥ When the copying cycle is over, the copy count indicator indicates the initial copy count.
   If the copying operation stops and the ADD PAPER message is indicated, the remaining number of copies will be made automatically as soon as paper is added and the COPY START key is pressed.

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⑦ If a jam occurs during copying operation, the JAM message will be indicated on the display and the copying operation will stop. When the problem is corrected, the copy count indicator indicates the remaining number of copies.

⑧ If the copier is left alone for about two minutes after the end of copying operation or any key operation, it automatically returns to the standard mode; this is called *auto-clear* time and may be changed in the asterisk mode.

C. Automatic Start

The automatic start mode can be activated while the copier is in the wait period.

Place the documents, set the copy mode, and press the COPY START key.

The START indicator changes from green to orange to indicate that the automatic start mode has been activated; the interrupt mode cannot be activated.

The copier will start making copies automatically as soon as it enters the standby mode.

The automatic start mode can be de-activated by the CLEAR/STOP key or the RESET key.

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D. Using the Asterisk Mode (user mode)

The machine is equipped with an asterisk mode, which enables the user to enter settings to suit his/her needs.

Key operation	Description
✳ → 1 → ✳	Zoom program
✳ → 2 → ✳	Binding program
✳ → 3 → ✳	Document automatic count (NP3050 only)
✳ → 4 → ✳	Density correction
✳ → 5 → ✳	Corona wire cleaning
✳ → 6 → ✳	Auto clear time
✳ → 7 → ✳	RDF cleaning
✳ → M → ✳	Copy mode memory

Table 1-3 Asterisk Mode

1. Zoom Program

Enter the document size and the desired copy size, to have the machine compute the correct reproduction ratio.

1) Press ✳, 1, and then ✳.

```
Original size
                    <0-9><*>
```

2) Enter the document size using the numeric keypad, and press the * key.
· Enter '100 mm', for example.

```
Original size 100mm
                    <0-9><*>
```

3) Enter the desired copy size using the numeric keypad.
· Enter '60 mm', for example.

```
Copy size 60mm
                    <0-9><*>
```

4) Press ✳ key.
· The machine computes '60 ÷ 100 = 0.6' and sets the ratio to 60%.

```
Copies will be 60%
of original size.   <*>
```

Note:
If the result of computation is 50% or less, 50% will be chosen; if 200% or more, 200% will be chosen.

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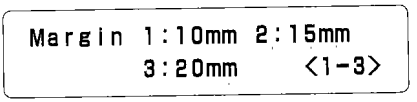
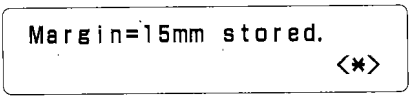
2. Binding Width

When making copies in the binding mode, the binding width may be one of three types.

1) Press [*], 2, and then [*].



2) Enter '1', '2', or '3' using the numeric keypad.
- Enter '2', for example.

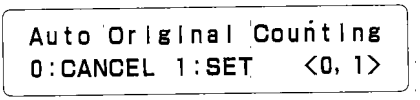


3) Press the [*] key to return to the standard screen.

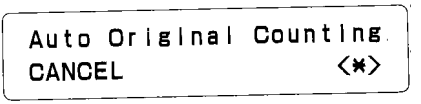
3. Disabling the Document Auto Count Mode (feeder)

When using the feeder and making two-sided copies of one-sided documents, the documents are counted without copying so the first page document will be copied on the face side; if an odd number of documents are set, the last page will be a one-sided copy. To disable this mode, operate as follows:

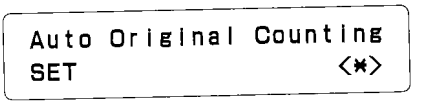
1) Press [*], 3, and then [*].



2) Enter '0' or '1' using the numeric keypad.
- when '0' is selected,



- when '1' is selected,



3) Press the [*] key to return to the standard screen.

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4. Density Correction

Use this mode to correct the density if copies are still too dark or too light after normal adjustments.

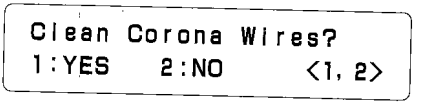
1) Press [*], 4, and then [*].

2) Press the *darker* key for darker copies; press the *lighter* key for lighter copies.
3) Press the [*] key to return to the standard screen.

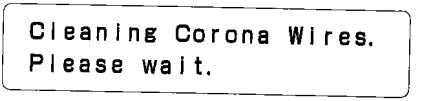
5. Cleaning the Corona Wire

Use this mode to have the primary, transfer, and separation corona wires cleaned automatically.

1) Press [*] 2, and then [*].



2) Press the [*] key; the wires will be cleaned for about 40 seconds.



This mode will be cleared automatically after cleaning.

Note:

The corona wires will be cleaned automatically if the machine is switched ON while the surface temperature of the fixing roller is 100°C or less.

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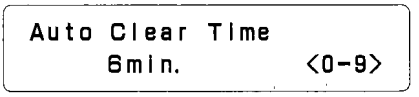
6. Auto Clear Time

The period before the auto clear mechanism is activated may be varied between one and nine minutes in one-minute increments. If set to '0', the mechanism is disabled.

1) Press [*], 6, and then [*].



2) Enter and number between '0' and '9'.
- To set it to '5',

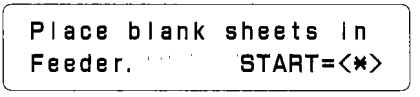
press '5'.

3) Press the [*] key to return to the standard screen.

7. RDF Cleaning Mechanism

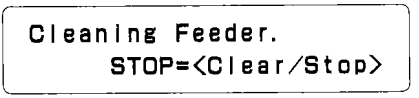
To clean the RDF's separation belt and feeder roller, enter the following:

1) Press [*], 7, and then [*].



2) Set about ten blank sheets of copy paper on the RDF's document tray.
3) Press the [*] key.

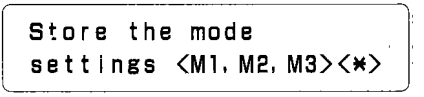
- The sheets will be picked up automatically, and the RDF operates as if in the document count mode, cleaning the parts.
  The mode is cleared automatically after the cleaning operation is completed.



8. Copy Mode Memory

As many as three copy modes may be chosen at will and stored.

1) Set a desired copy mode.
2) Press the [*] key.



3) Press any of the copy mode memory keys (M1, M2, or M3).
4) Press the [*] key.

■ Recalling the mode
Press the copy mode memory key under which the desired mode is stored.

Note:

The stored modes remain intact even when the machine is switched OFF; they, however, will be erased when the RAM data is initialized in the service mode.

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E. Editor Control Panel(NP3050 only)

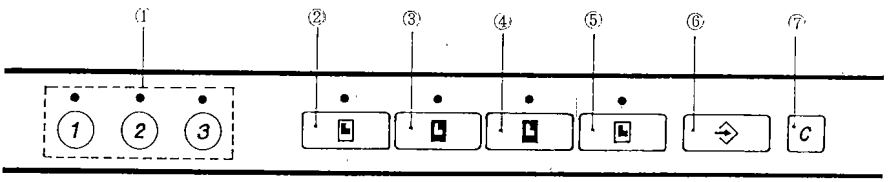

Figure 1-7b

	Key	Description
1	AREA NO. key	Press it using the hand-held pen to clear or change the areas stored as areas 1 through 3.
2	FRAME key	Press it using the hand-held pen to set the framing mode (area specification) .
3	BLANK key	Press it using the hand-held pen to set the blanking mode (area specification) .
4	2-COLOR key (inside, black; outside, mono)	Press it using the hand-held pen when specifying the 2-color mode (inside, mono; outside, black) .
5	2-COLOR (inside, black; outside, mono)	Press it using the hand-held pen when specifying the 2-color mode (inside, black; outside, mono) .
6	AREA key	Press it using the hand-held pen to store the specified area.
7	CLEAR key	Press it using the hand-held pen when specifying an area or clearing each mode.

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V. WARNINGS AND REMEDIES

A. JAM Message

```
Open front cover and
remove jammed paper.
```

The message is indicated in response to a jam; go through the following steps to remove the jam.

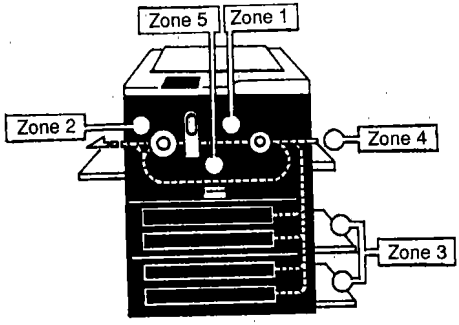

Figure 1-8

1. Zone 1 (pick-up/feeder assembly)

1) Shift the feeder assembly lever to the right.
2) Turn the knob on the registration roller counterclockwise, and remove the jam.

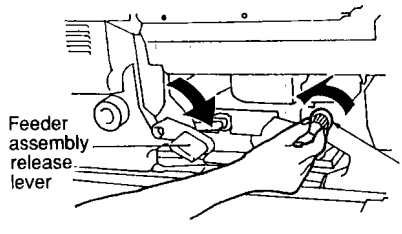

Figure 1-9

2. Zone 2 (fixing/delivery assembly)

1) Detach the delivery tray, and open the delivery door.
   ■ If the paper is trapped in the fixing assembly,
2) Turn the fixing assembly knob counterclockwise, and remove the jam.

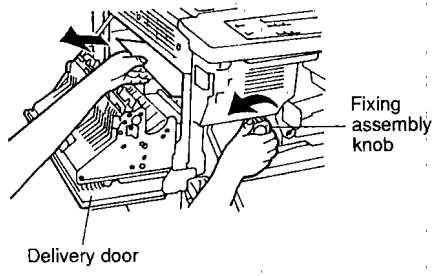

Figure 1-10

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3. Zone 3 (vertical path assembly)

1) Open the upper right door of the cassette assembly, and remove the jam; if necessary, slide out the cassette.

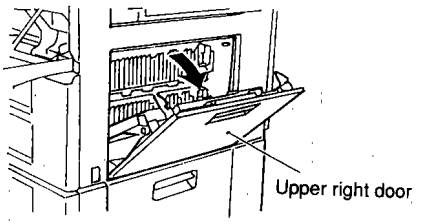

Figure 1-11

4. Zone 4

1) Lift the manual tray cover, and remove the jam.

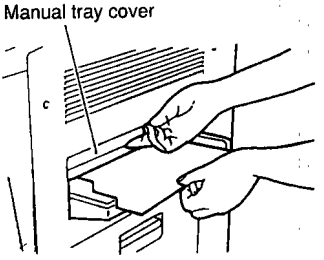

Figure 1-12

5. Zone 5(lower feeder assembly NP3050 only)

1) Shift the lower feeder assembly lever up, and remove the jam.

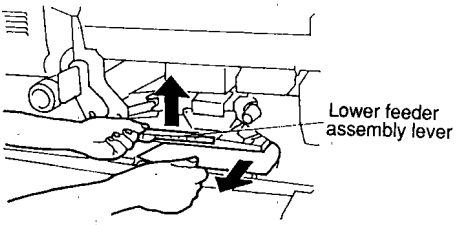

Figure 1-13

6.Pick-up from Cassette Feeding Unit-E1

1) Remove the copy paper from the copier.
2) Open the lower right door, and remove the jam; if necessary, slide out the cassette.

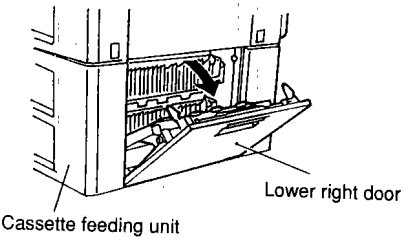

Figure 1-14

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7.Pick-up from Paper Deck Pedestal-D1

1) Remove the copy paper from the copier.
2) Open the lower right door, pull the grip in the direction of the arrow, and remove the jam.

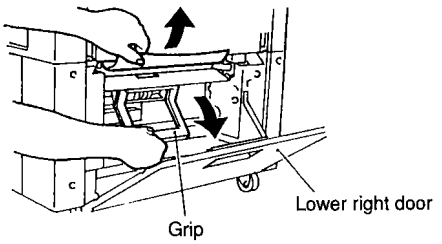

Figure 1-15

3) Slide the right deck out and to the front, and remove the jam.

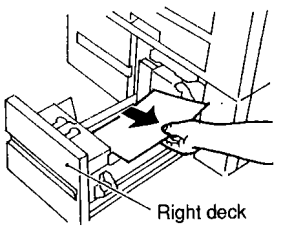

Figure 1-16

■ If pick-up was from the left deck,

4) Slide the left deck out and to the front, and remove the jam.

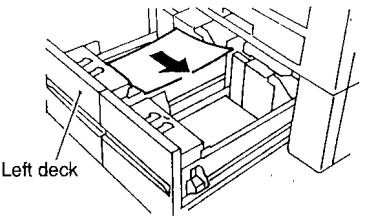

Figure 1-17

5) Slide the left feeder assembly out and to the front, open the upper guide, and remove the jam.

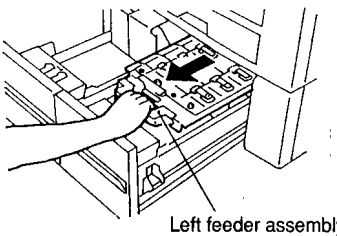

Figure 1-18

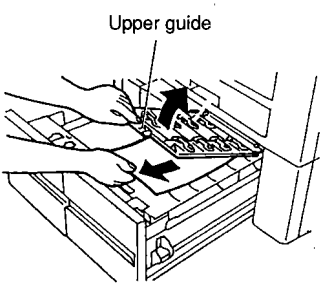

Figure 1-19

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8. Pick-up from Paper Deck Pedestal-E1

1) Remove the copy paper from the copier.
2) Open the side door.

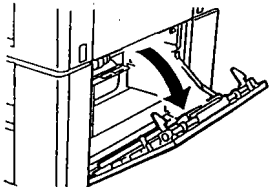

Figure 1-20

3) Lift the metal plate, and remove the jam.

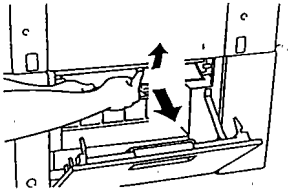

Figure 1-21

4) Pull the paper deck out until it stops, and remove the jam.

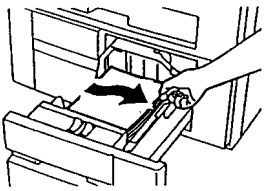

Figure 1-22

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B. ADD PAPER Message

```
Load paper.
```

The message is indicated when the cassette runs out of paper.

1) Hold the grip of the selected cassette, and slide it to the front until it stops.

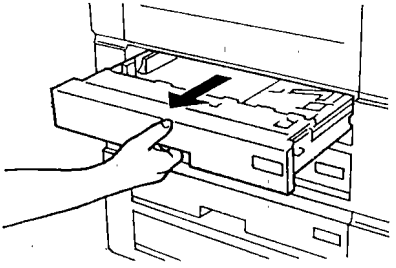

Figure 1-23

2) Remove the paper from its package, and turn the paper upside after removing it from the package.

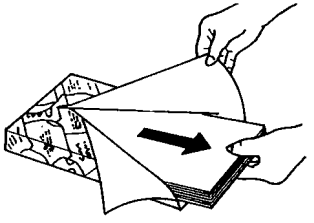

Figure 1-24

3) Place the paper on the lifting plate of the cassette; push down on the leading edge of the paper lightly so that it fits under the claws (front and rear).

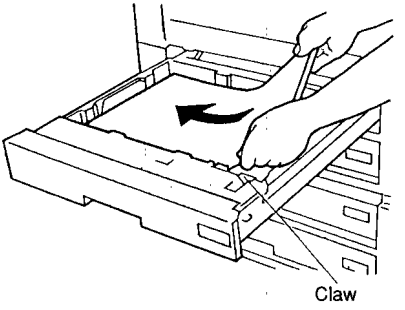

Figure 1-25

Note:

Paper may be added to cassettes during copying operation as long as they are not selected.

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1. If the Paper Deck Pedestal-D1 is used,

1) Hold the grip of the selected deck, and slide it to the front as far as possible.

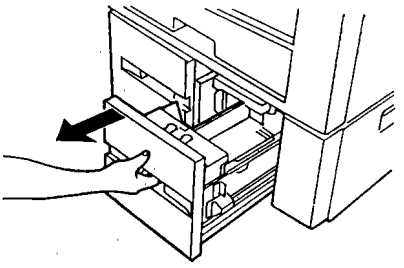

Figure 1-26

2) Open the package, and take out the paper; see Figure 1-27.

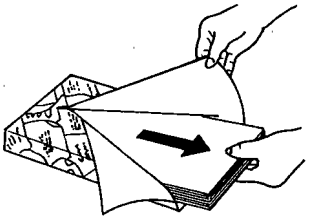

Figure 1-27

3) Set the paper in the deck; see Figure1 -28.

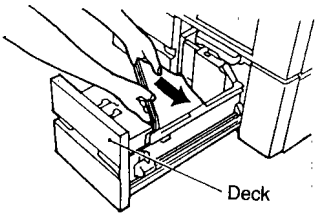

Figure 1-28

4) Set the deck in the machine.

Note:

If the deck is not selected, it may be replenished with paper even while the machine is making copies.

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2. If Paper Deck Pedestal-E1 is usad.

1) Hold the grip of deck, and slide out it to the front as far as possible

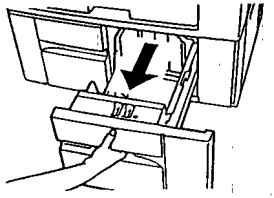

Figure 1-29

2) Open the package, and take out the paper.

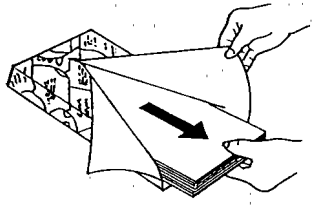

Figure 1-30

3) Set the paper in the deck.

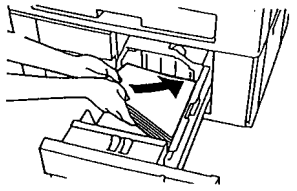

Figure 1-31

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C. ADD TONER Message

1. Adding Black Toner

This message is indicated when the hopper is running out of black toner; replenish the toner as follows:

```
Add black toner.
```

1) Open the front door.
2) Grasp the left side of the hopper and swing it to the front while lifting slightly.

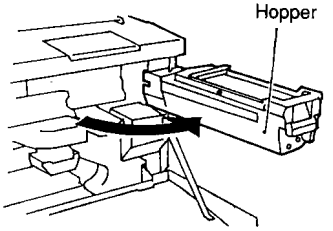


Figure 1-32

3) Shake the cartridge right and left several times so that toner will be evenly mixed.

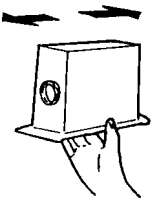
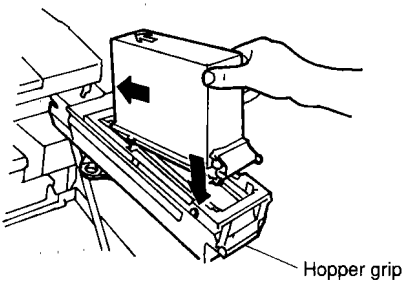


Figure 1-33

4) Hold the toner cartridge so that the arrow on its top faces up. After fitting the protrusion on the cartridge end into the hopper, bring the cartridge into level contact with the hopper with the bosses on both right and left slide fitting into the cut-outs of the hopper.
   - The toner cartridge will be locked, and the hopper grip springs out.



5) Hold and slide out hopper grip.
   - Some resistance will be felt while sliding out the grip; slide it all the way out until the toner cartridge grip springs out.

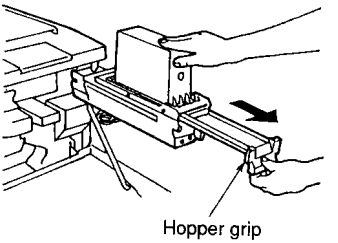


Figure 1-35

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6) Hold the cartridge grip, and pull it to the front until it stops.

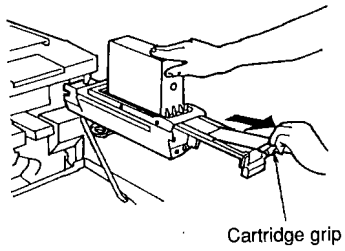

Figure 1-36

7) Tap on the toner cartridge lightly so that all toner falls into the hopper.
8) Push the hopper grip back in.
   ■ The cartridge grip will also return to its original position, unlocking the cartridge.

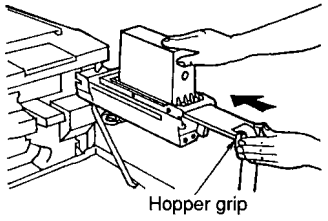

Figure 1-37

9) Detach the toner cartridge carefully.
10) Set the hopper into the copier.
11) Close the front door.

Note:
For adding black toner at time of installation, see CHAPTER 5.

2. Color toner

```
Add color toner.
```

This message is displayed when the color toner is running low. Identify the color of the toner, and operate as follows:
1) Open the machine's front door.
2) Swing open hopper to the front.
3) Hold the grip, and slide out the CD unit.

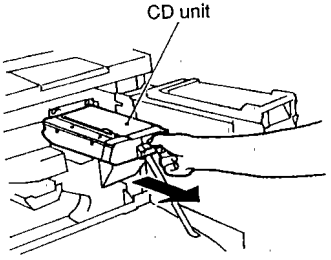

Figure 1-38

4) Open the toner supply mouth cover of the CD unit.
5) Check the new toner cartridge to make sure that it contains the desired color, and shake it back and forth about ten times.

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6) Keep the toner cartridge firmly in contact with the CD unit, and peel the seal slowly while holding the cartridge.

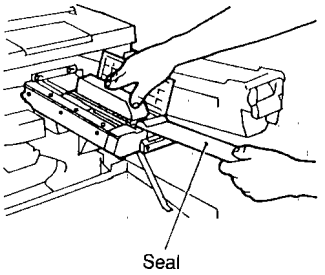

Figure 1-39

7) Tap on the top of the toner cartridge until all toner is moved to the hopper unit.
8) Hold the toner cartridge, and detach it slowly.
9) Close the toner supply mouth cover, and lock it.
10) Set the CD unit in the copier.

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VI. DAILY MAINTENANCE BY THE USER

Advise the user to clean the following at least once a week.

1. Copyboard Glass

Wipe it using a cloth moistened with water; then, dry wipe it.

2. Copyboard Cover

Wipe it using mild detergent; then, dry wipe it.

Advise the user to clean the following if an image problem is noted.

3. Primary Corona Wire and Transfer/Separation Corona Wire

Enter the asterisk mode, and execute corona wire cleaning.

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I. IMAGE FORMATION

A. Outline

The NP3050/3030 utilizes an electrophotographic process; see figure 2-1.

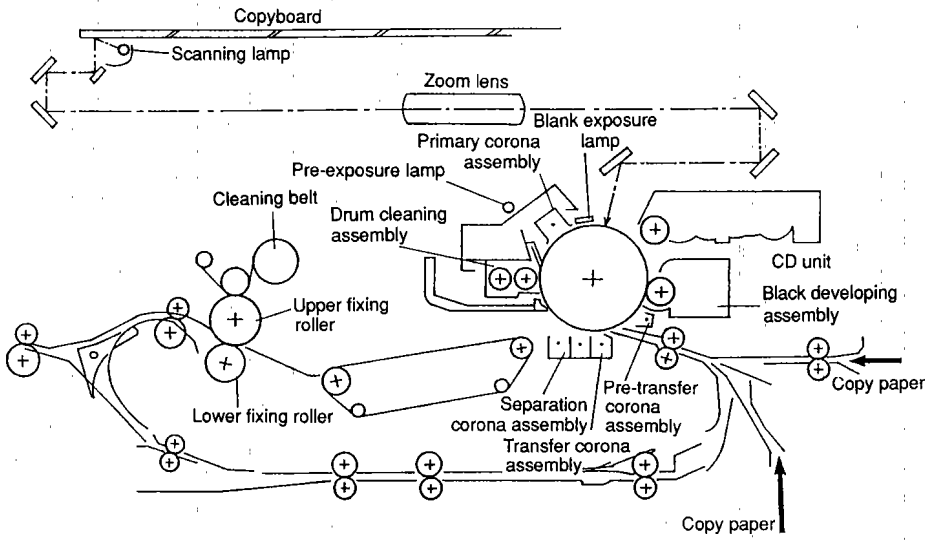

Figure 2-1

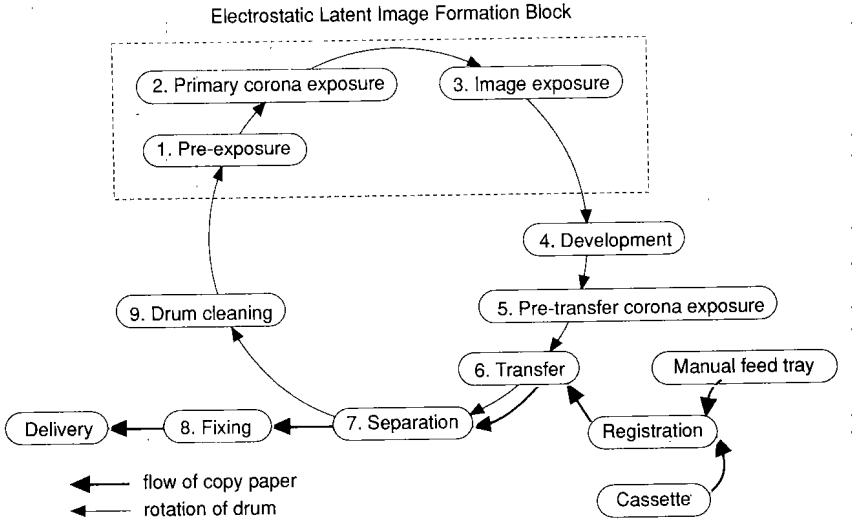

Figure 2-2

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The following nine steps are involved in producing images:

Step 1 Pre-exposure
Step 2 Primary corona exposure (negative DC)
Step 3 Image exposure
Step 4 Development (AC + negative DC)
Step 5 Pre-transfer corona exposure (AC + positive DC)
Step 6 Transfer (negative DC)
Step 7 Separation (AC + positive DC)
Step 8 Fixing
Step 9 Drum cleaning

The photosensitive drum consists of two layers: the outer layer is a photoconductive layer made of OPC and the inner layer, a conductive core of aluminum.

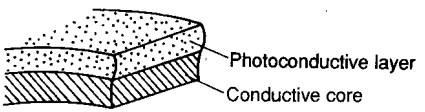

Figure 2-3

B. Electrostatic Latent Image Formation Block

This block consists of three steps through which the negative charges in the areas of the drum surface corresponding to the dark areas of the document are left as they are while those corresponding to the light areas of the document are rid of the negative charges, thereby forming an electrostatic image on the drum surface.

These electrostatic images on the drum surface are not visible to the human eye and, therefore, are called *electrostatic latent images.*

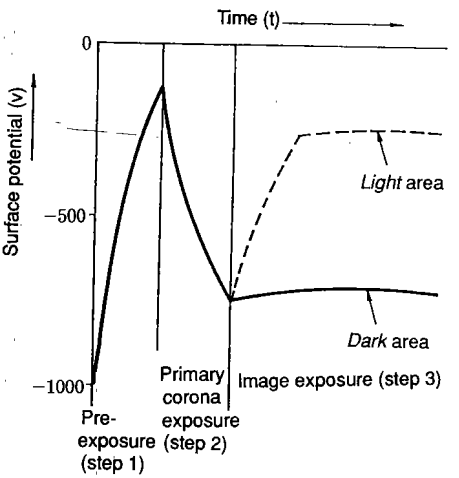

Figure 2-4

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C. Step 1 Pre-Exposure

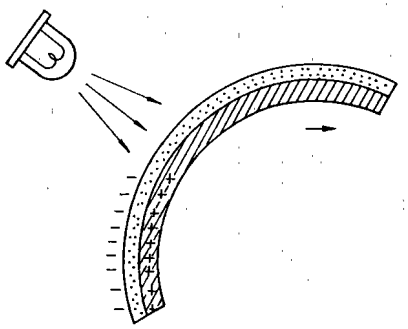

Figure 2-5

To ensure even copy density, pre-exposure eliminates the residual charges on the drum surface to prepare for primary corona exposure.

D. Step 2 Primary Corona Exposure

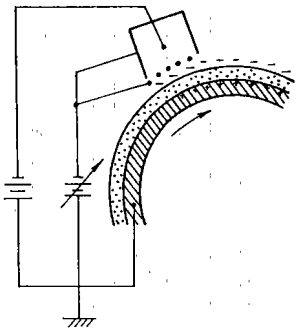

Figure 2-6

Primary corona exposure charges the drum surface to a uniform negative potential. A bias is applied to the grid to maintain the surface potential of the drum at a constant value. At the same time, a voltage identical to the grid bias is applied to the shield plate to increase the charging efficiency of the primary corona assembly.

E. Step 3 Image Exposure

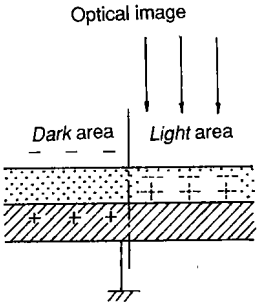

Figure 2-7

The optical image of the document is projected on to the drum surface to neutralize the charges in the *light* areas.

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F. Step 4 Development

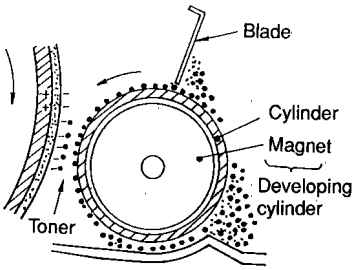

Figure 2-8

As shown in Figure 2-8, the developing assembly consists of a developing cylinder and a magnetic blade; the developing cylinder consists of a fixed magnet and a cylinder which rotates around the magnet.

The toner (developer) used for this machine is of a signal-component type, consisting mainly of magnetite and resin. The toner has an insulating characteristic and is charged to a positive potential by friction against the rotating cylinder.

The toner for color development is a mixture of iron carrier (magnetite) and toner (resin). The friction against the rotating cylinder charges the carrier to a negative potential and the toner, to a positive potential.

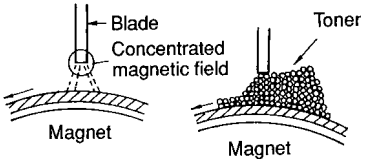

Figure 2-9

A concentrated magnetic field develops between the magnet and the tip of the blade, attracting the toner.

Once inside the magnetic field, the toner becomes virtually immobile because of its strong attraction to the blade.

The toner is then deposited on the cylinder in a thin, even layer.

An AC bias and a DC bias (negative component) are simultaneously applied to the developing cylinder and the blade and, since the negative component is greater than the positive component at any given time, they provide a developing bias.

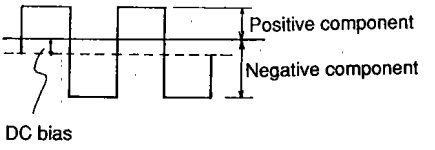

Figure 2-10

During copying operation, the toner is attracted to the photosensitive drum because of the drum surface potential and the development bias (positive component), thereby turning the electrostatic latent image into a visible image. Excess toner is then repelled from the photosensitive drum by the work of the drum surface potential and the development bias (negative component).

An AC bias, frequency in particular, mostly affects gradation; a lower frequency improves gradation but, at the same time, may fog the image.

A DC bias affects copy density and, therefore, fogging; a higther DC bias, i.e., closer to 0 V, darkens the image but, on the other hand, can fog the image.

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G. Step 5 Pre-Transfer Corona Exposure

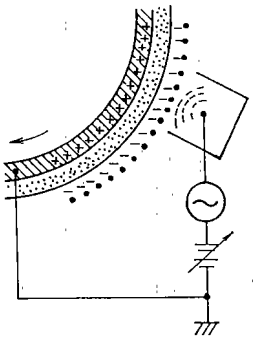

Figure 2-11

The AC corona from the pre-transfer corona assembly, together with a DC bias, balances the charge of the toner and eliminates excess charges on the drum.

The increase improves transfer and facilitates separation of the copy paper at the same time.

H. Step 6 Transfer

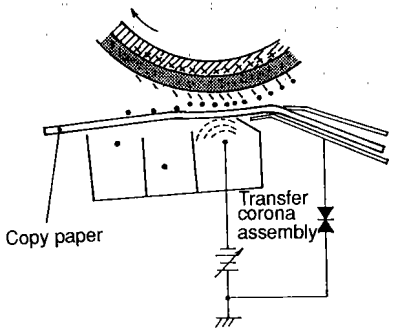

Figure 2-12

A negative corona charge is applied to the back of the copy paper, causing the toner on the drum to move to the copy paper.

The transfer guide is grounded through a varistor to prevent soiling of the back of the copy paper and to prevent poor transfer.

Note:

Direct grounding of the transfer guide would let the charges needed on the back of the copy paper to escape, leading to poor transfer; if not grounded, on the other hand, the transfer guide would be charged, attracting toner particles and, consequently, soiling the back of the paper.

Copy paper coming out of the fixing assembly is dry and has a high resistance. For this reason, in the automatic two-sided or overlay copying mode, the use of the transfer corona output applied to the first side of copy paper on the second side would cause faulty separation.

To prevent such a problem, the transfer corona output for the second side is made lower than that for the first side.

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I. Step 7 Separation

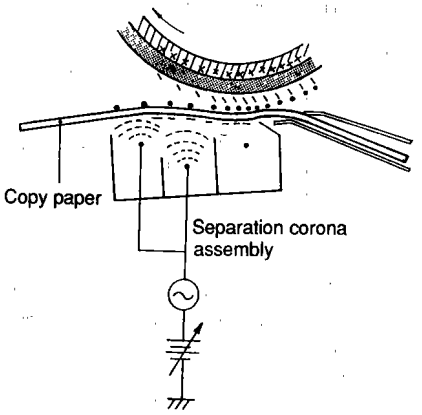

Figure 2-13

The copy paper is charged to a negative potential by the transfer corona and is statically attracted to the surface of the photosensitive drum. To separate the copy paper, the attraction between the drum and the paper is broken by an AC corona charge with a DC bias.

Copy paper coming out of the fixing assembly is dry, has a high resistance, and tends to curl. For this reason, in the automatic two-sided or overlay copying mode, the use of the separation corona output applied to the first side of copy paper to the second side would cause faulty separation.

To prevent such a problem, the positive DC component of the separation corona output for the second side is made lower than that for the first side.

J. Step 8 Fixing

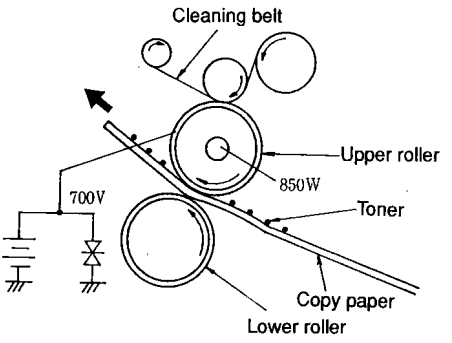

Figure 2-14

After transfer, the copy paper is moved through a pair of heat rollers, during which the toner image is fused into the fibers of the paper.

To prevent jams and toner offset, the upper fixing roller is kept in contact, at two points, with the cleaning belt impregnated with silicone oil.

The take-up mechanism moves the belt so that it is supplied with oil and cleans the upper roller while changing its point of contact.

Further, to ensure a constant voltage, the upper fixing roller is given a positive DC bias and is grounded through a varistor, thereby preventing toner offset.

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K. Step 9 Drum Cleaning

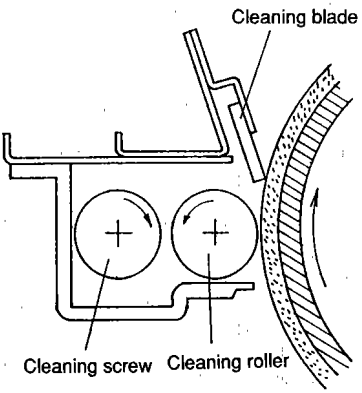

Figure 2-15

The cleaning blade scrapes the residual toner off the drum surface in preparation for the next copy run, ensuring reproduction of crisp images.

The toner scraped by the cleaning blade is moved to the front by the cleaning screw for collection inside the drum.

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II. AUXILIARY PROCESSES

A. Separation Claw

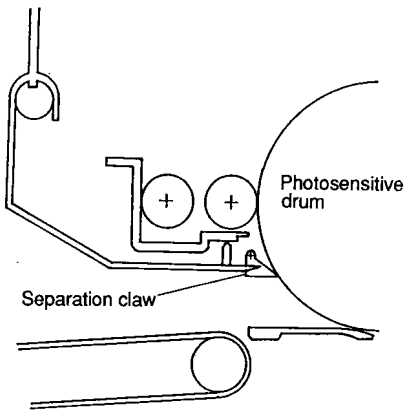

Figure 2-16

Copy paper, if not separated from the photosensitive drum because of faulty pre-transfer or faulty separation corona exposure, tends to move into the drum cleaning assembly. To prevent this problem, the bottom of the drum cleaning assembly is equipped with separation claws to force the paper off the drum.

B. Ozone Filter

The exhaust fan assembly and the feeder fan assembly are equipped with a filter to prevent leakage of ozone occurring in the corona assemblies.

C. Static Eliminator

The outlet from the delivery assembly is equipped with a static eliminator consisting of a grounded brush to remove the residual charges.

D. Blank Exposure Lamp

The blank exposure lamp (LEDs) goes ON when the drum is rotating and the scanner is moving forward without exposing the document; this is to eliminate the charges in the non-image areas of the drum surface, thereby preventing adhesion of unwanted toner.

The same LEDs of the lamp go ON also to blank out the non-image areas that are varied to suit different reproduction ratios and paper widths.

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I. BASIC FUNCTIONS

A. Functional Construction

The machine can be divided into four functional blocks; i.e., pick-up/feeder system, exposure system, image formation system, and control system.

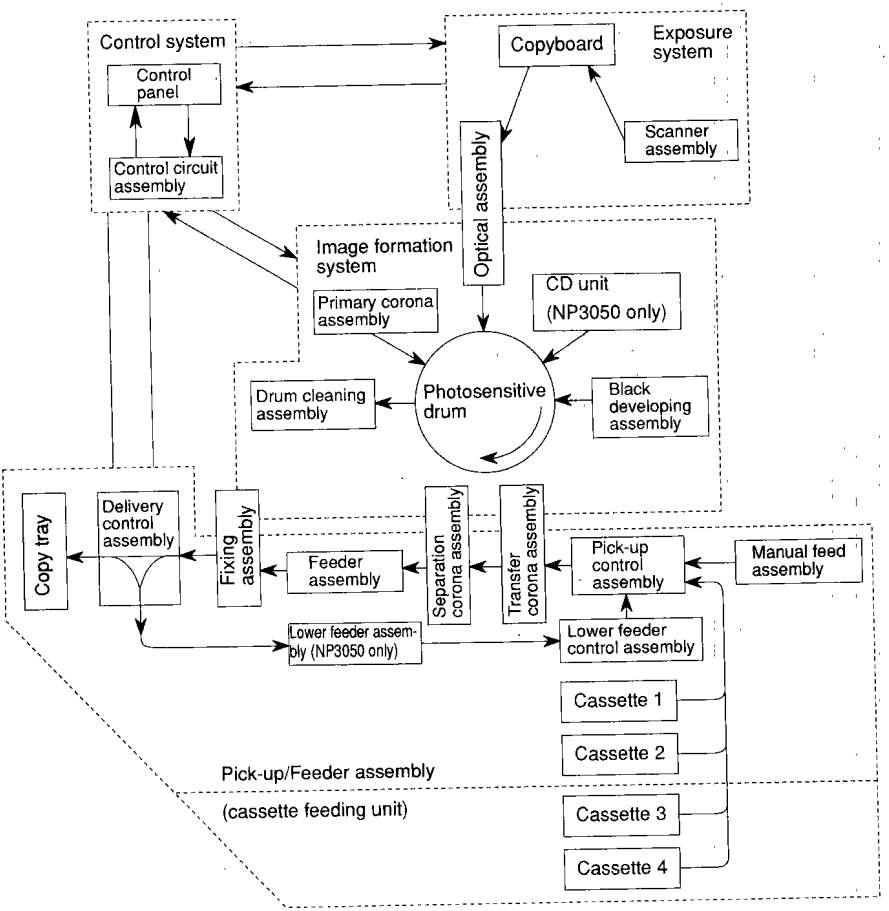

Figure 3-1

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B. Electrical Circuitry

The machine is controlled by three microprocessors on the DC controller, each with the following functions:

Microprocessor
Q166 (master CPU)
- Controls the copying sequence

Q158 (slave CPU)
- Controls the stepping motor

Q134 (slave CPU)
- Controls the blank exposure lamp

The rest of the ICs on the DC controller are as follows:

ICs
Q168, Q163 (I/O port)
Q159 (gate array)
- Outputs clock pulses to CPU
- Expands CPU ports
- Outputs clock pulses to lamp regulator / HVT

Q135 (IPC)
- Handles communication with RDF, sorter, and editor (serial)

Q241 (PLL IC)
- Controls the main motor

Q150 (SRAM)
- Serves as expansion memory

Q161 (EP-ROM)
- Serves as memory for program

Q167 (RESET IC)
- Resets the machine at power-on
- Resets the machine after error

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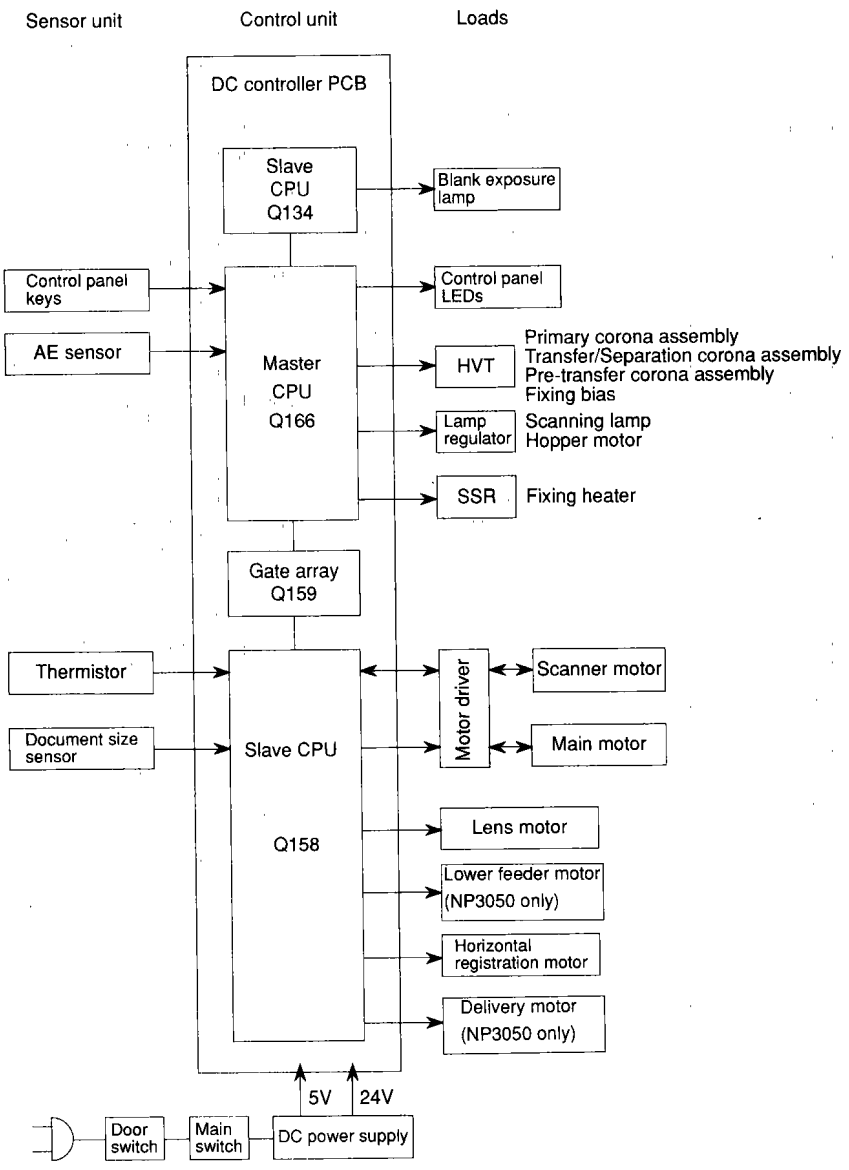

Figure 3-2

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C. Inputs to DC Controller

1. Inputs to DC Controller (1/4)

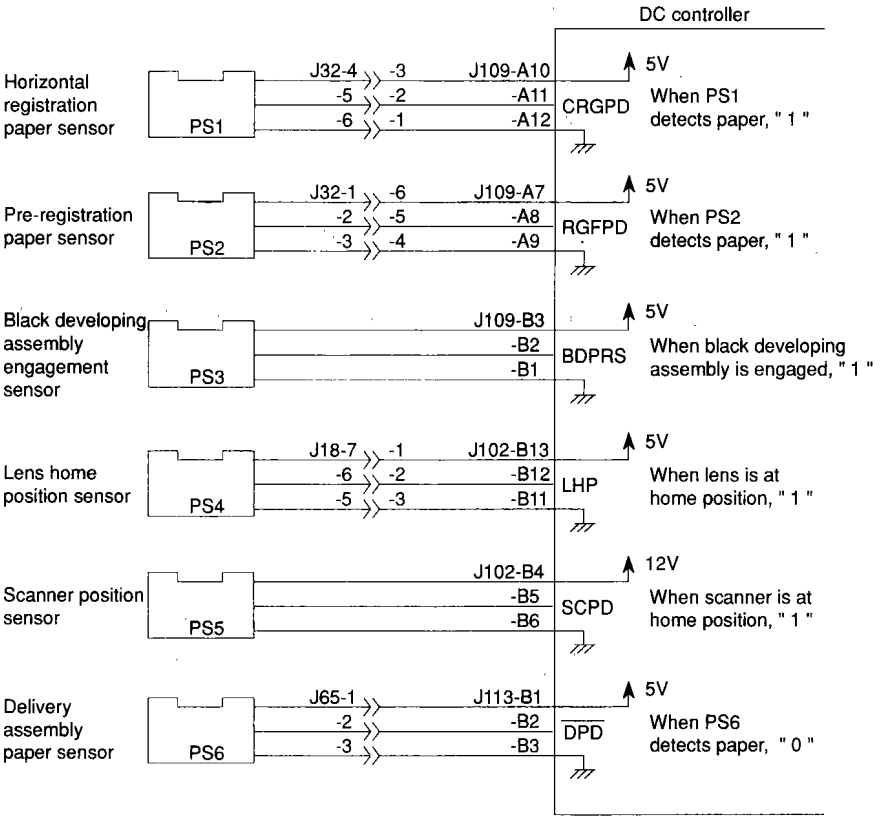

Figure 3-3 A

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2. Inputs to DC Controller (2/4)

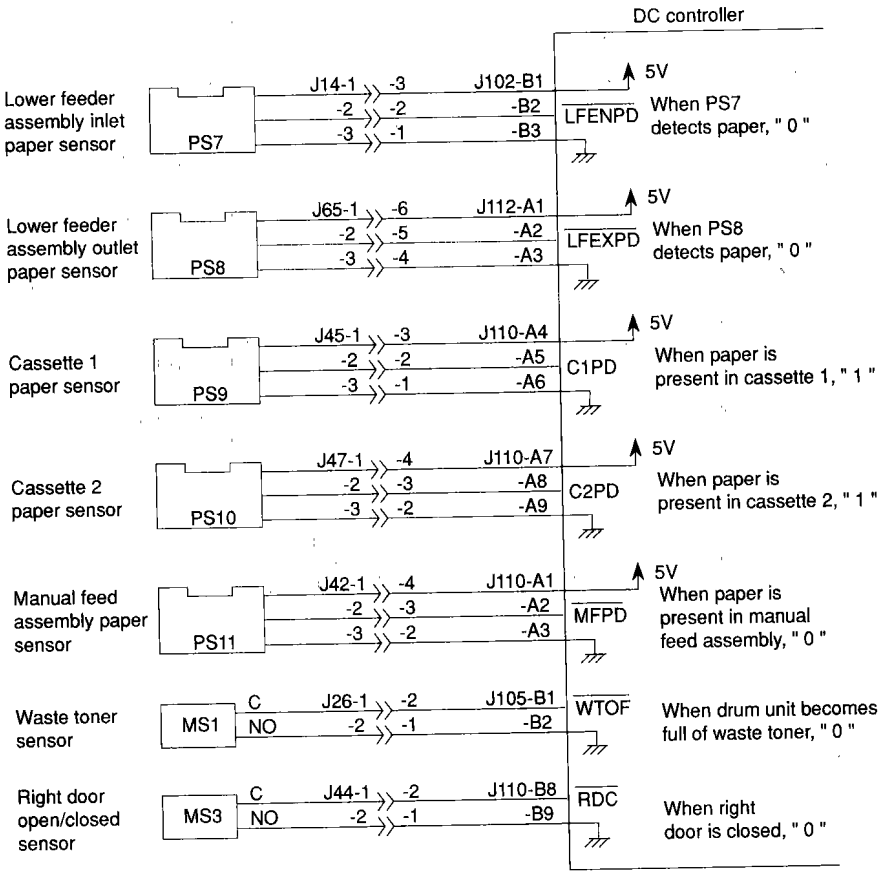

Figure 3-3 B

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3. Inputs to DC Controller (3/4)

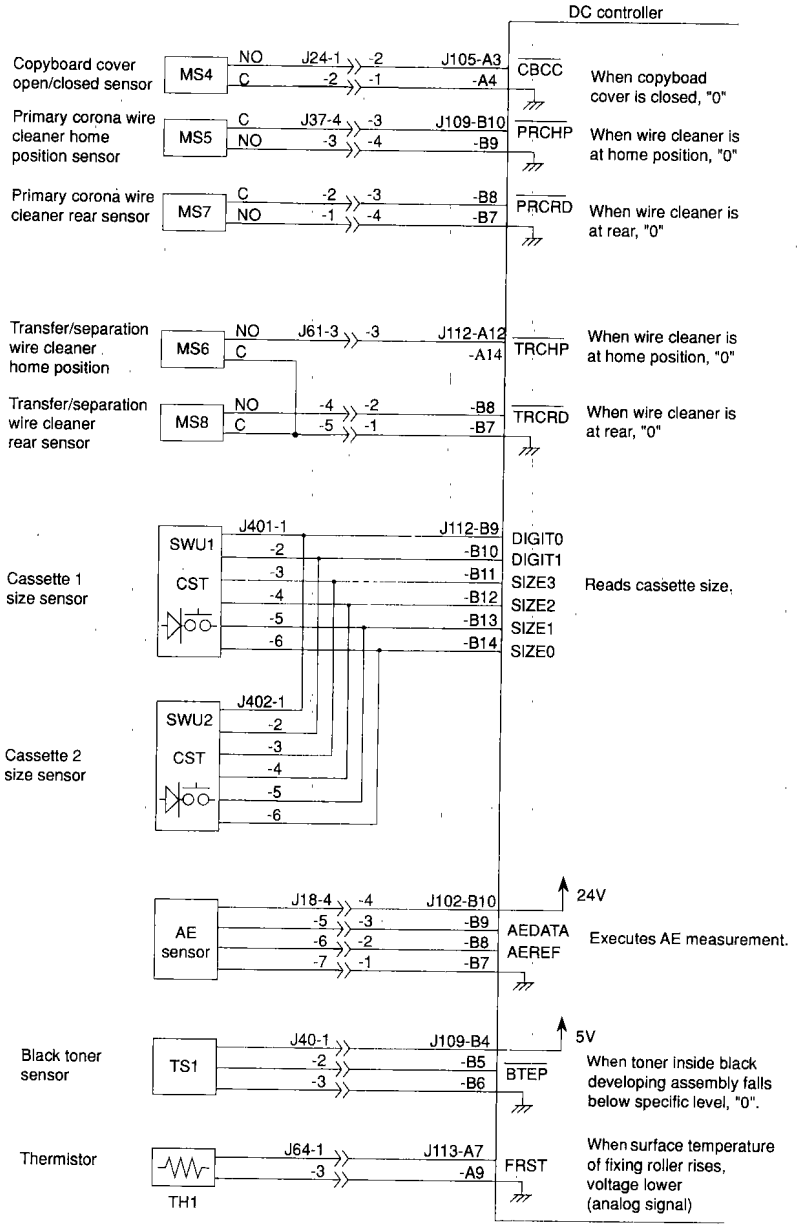

Figure 3-4

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4. Inputs to DC Controller (4/4)

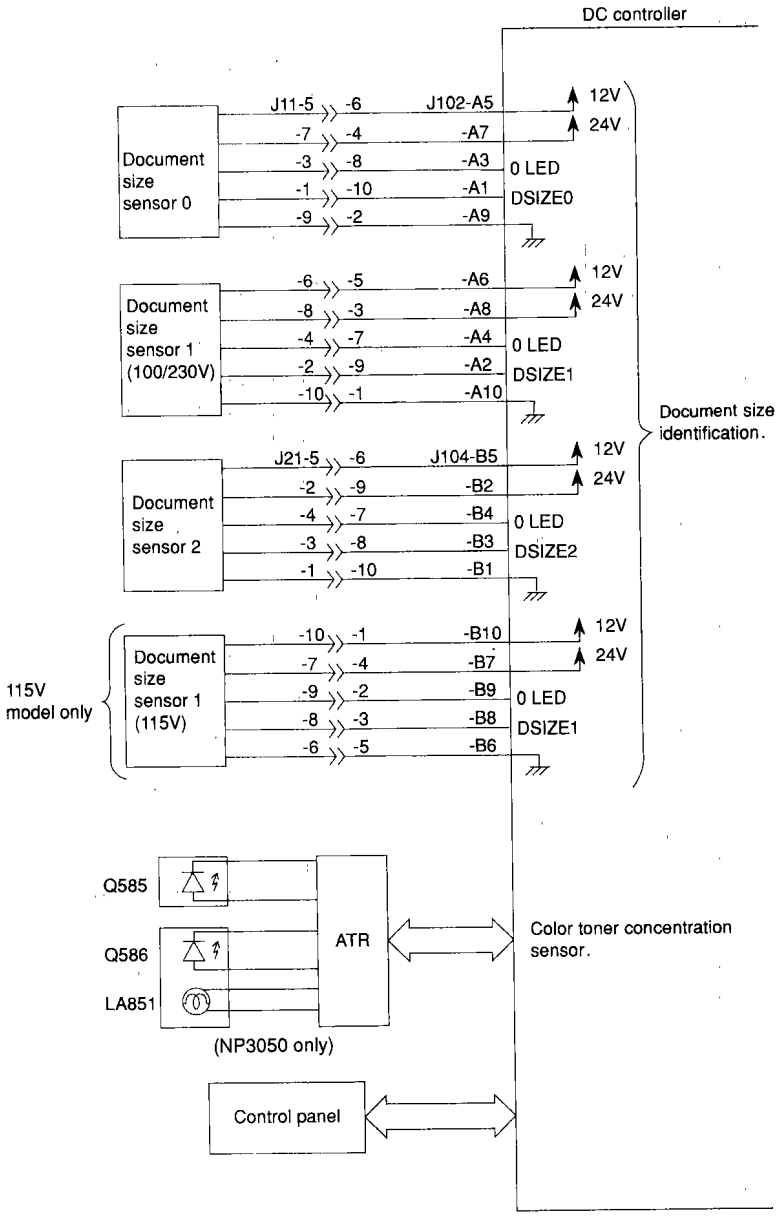

Figure 3-5

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D. Outputs from DC Controller

1. Outputs from DC Controller (1/4)

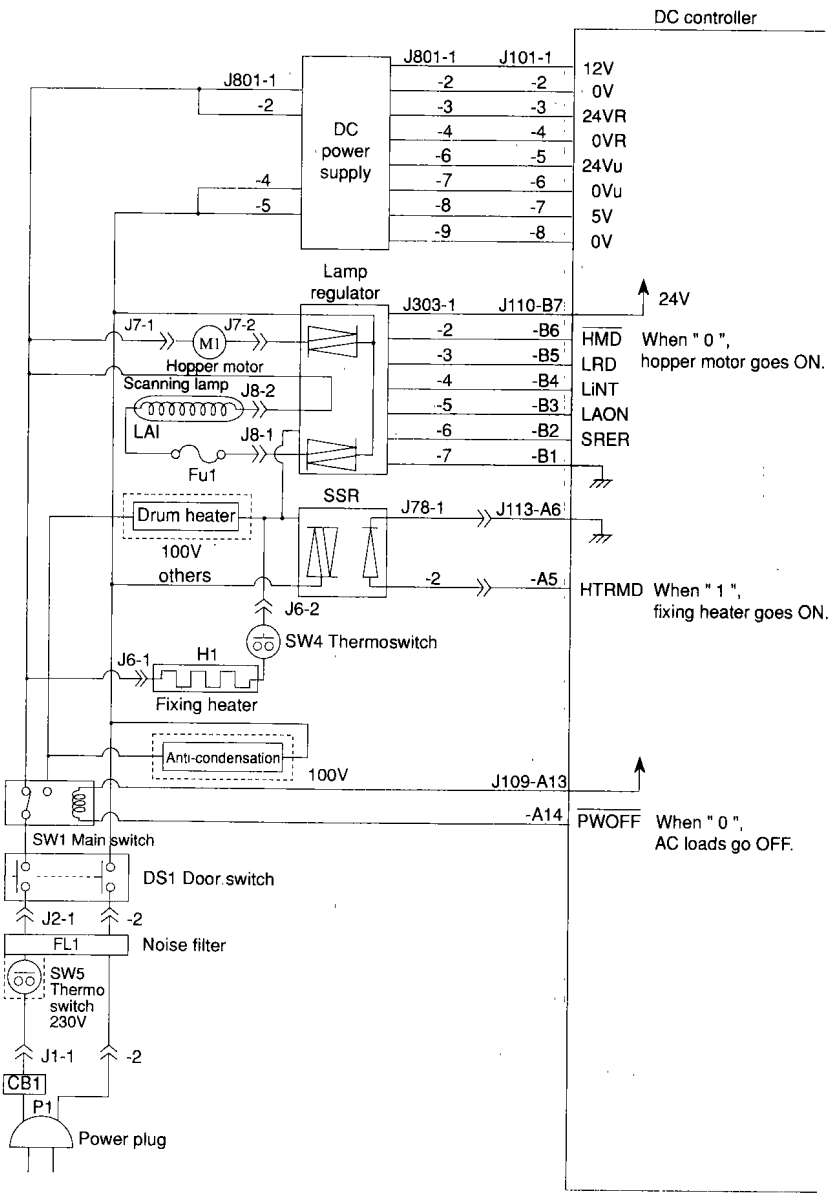

Figure 3-6

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2. Outputs from DC Controller (2/4)

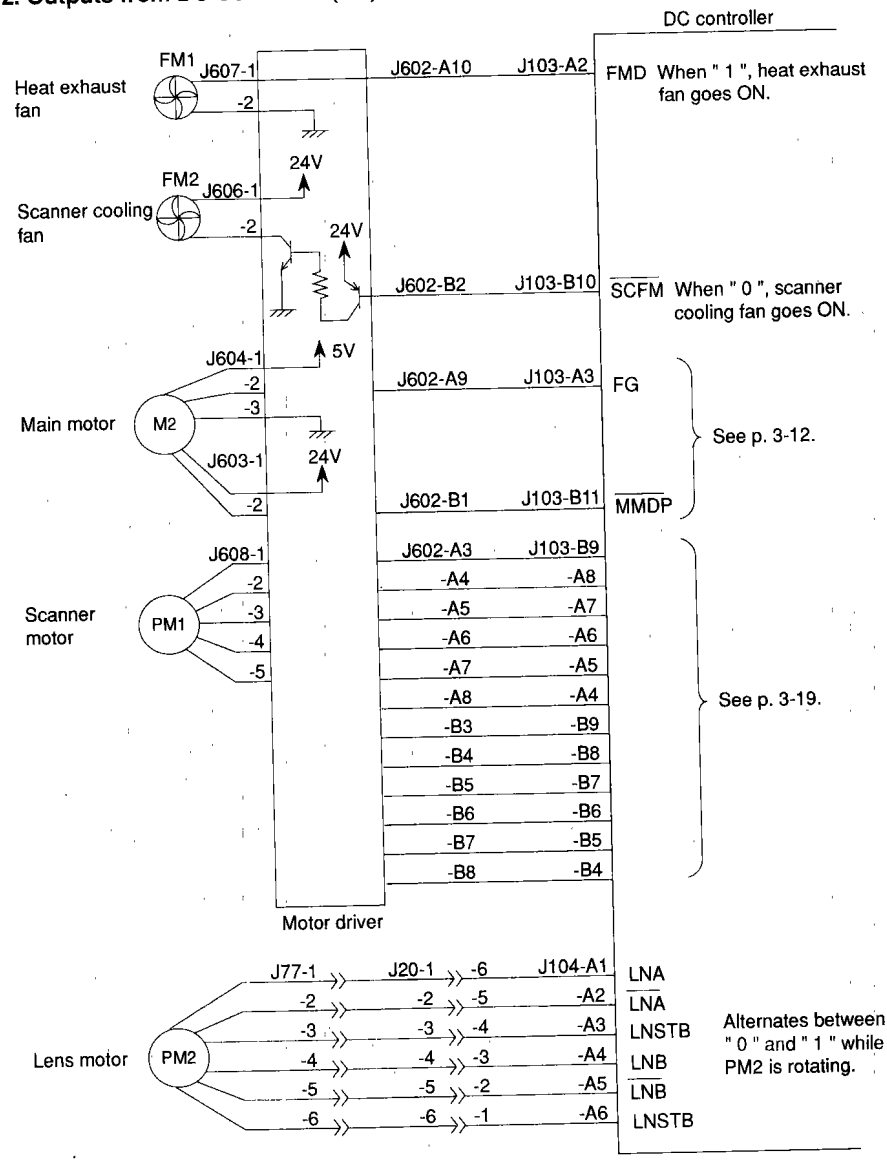

Figure 3-7

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3. Outputs from DC Controller (3/4)

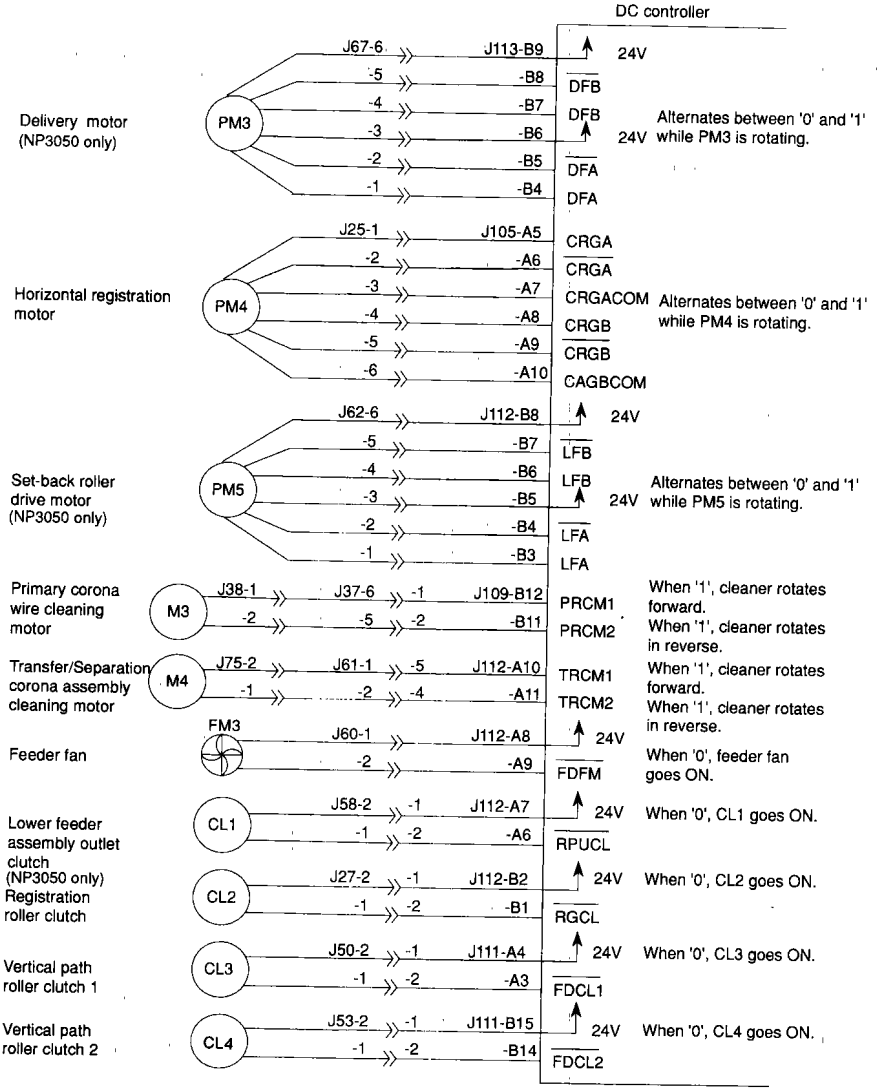

Figure 3-8

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4. Outputs from DC Controller (4/4)

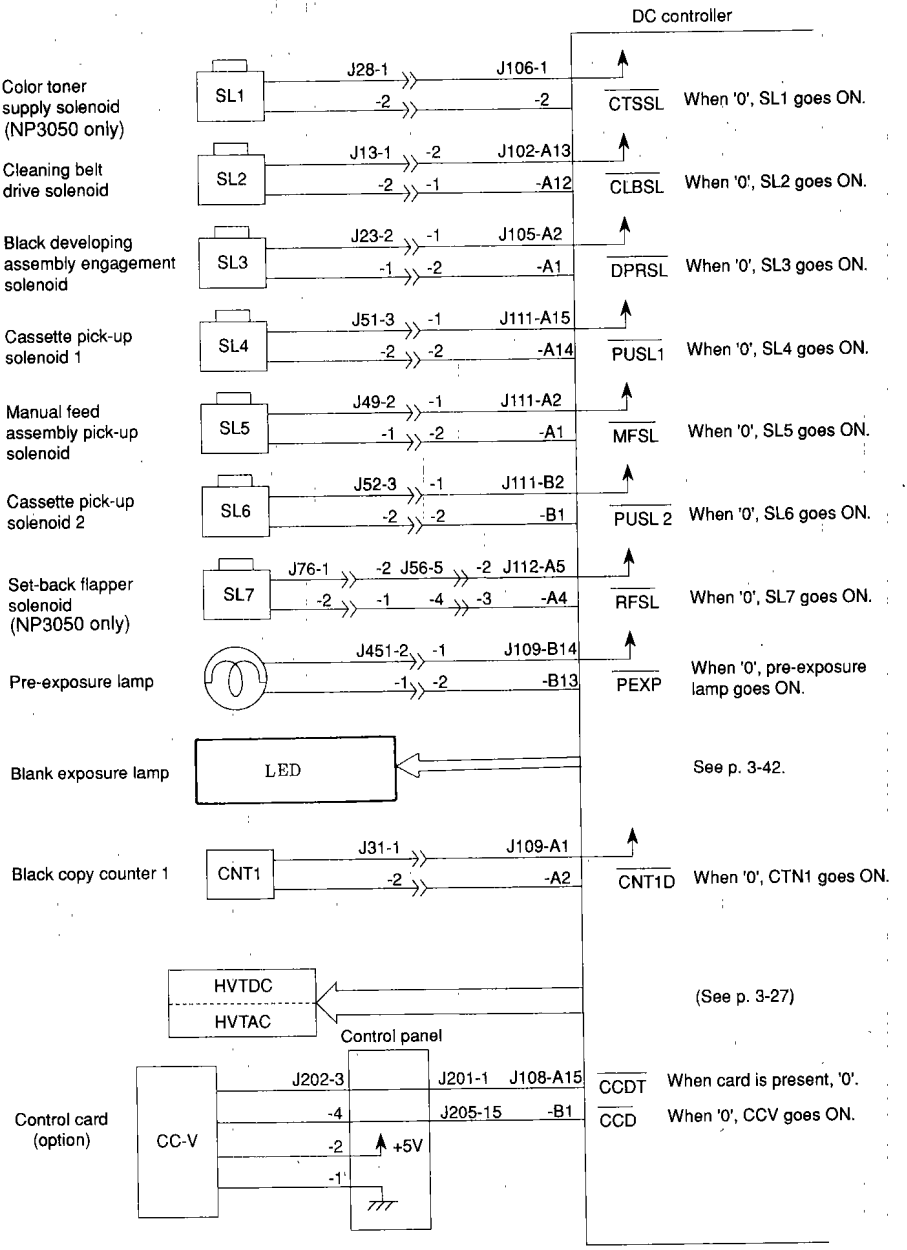

Figure 3-9

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E. Controlling the Main Motor

1. Outline

The machine's main drive is generated by a DC motor (M2).

Figure 3-10 shows the main motor control circuit, which has the following functions:

i. Turns the main motor ON and OFF.
ii. Maintains rotation of the main motor at a constant speed.

The main motor has a built-in FG (frequency generator) circuit which generates clock pulses of a frequency suited to the revolution of the motor. The main motor is controlled to rotate at a constant speed regardless of the selected reproduction ratio by feeding these clock pulses (FG signal) to PLLIC (Q241).

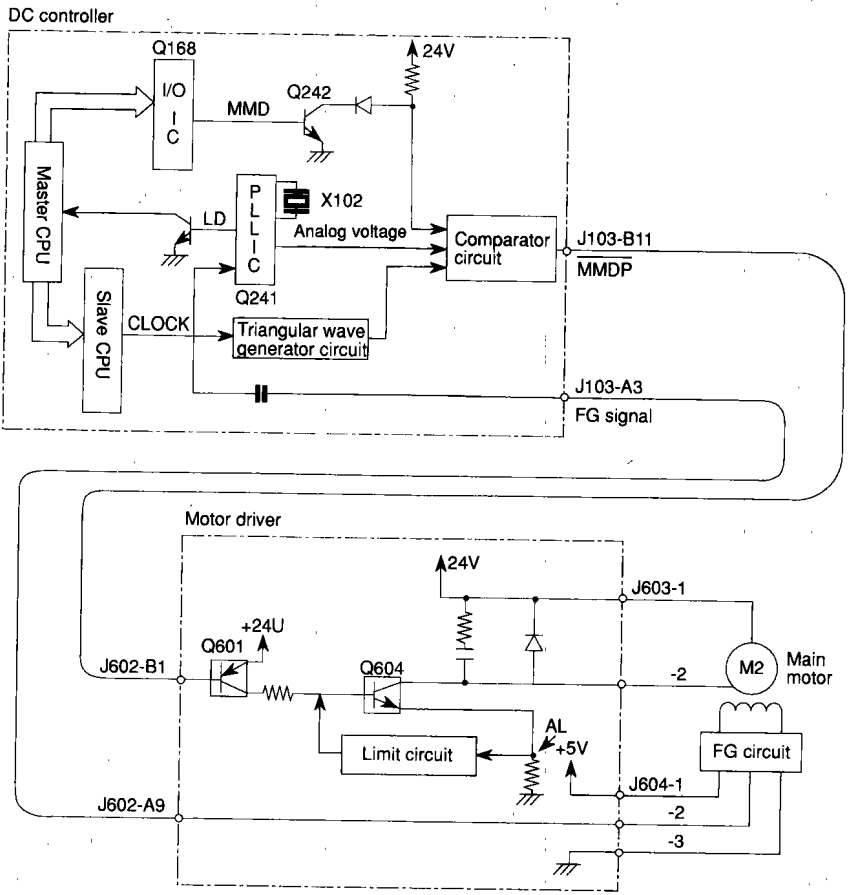

Figure 3-10

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2. Circuit Operation

a. ON/OFF Operation

The I/O port IC (Q168) on the DC controller generates 'MMD=1'.

⇩

A reference voltage is sent to the comparator circuit.

⇩

The DC controller generates the pulse signal (MMDP).

⇩

The main motor rotates.

b. Constant Rotation

The speed of the main motor fluctuates.

⇩

An FG signal is sent to the DC controller representing the fluctuation that has occurred.

⇩

The reference signal and the FG signal are compared by the PLLIC, and an analog voltage that suits the difference is generated.

⇩

The duty ratio of MMDP is varied by the triangular wave and the analog voltage.

⇩

The period over which the voltage of the main motor is applied is varied.

⇩

The fluctuation in the speed of the main motor is corrected.

c. Protection Against Excessive Current Flow

If excessive current flow occurs in the motor at time of MOTORON or MOTORLOCK, the following sequence takes place:

The current flowing through the main motor increases.

⇩

The input current (A_L) to the limiter circuit exceeds 4.8 A

⇩

Q604 goes OFF in response to the output from the limiter circuit.

⇩

The application of the voltage to the main motor stops.

d. Error Detection

If the main motor fails to rotate at a specific speed, the signal to the master CPU goes '1'; and, if this condition persists one second or more, 'E010' will be indicated.

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F. Basic Sequence

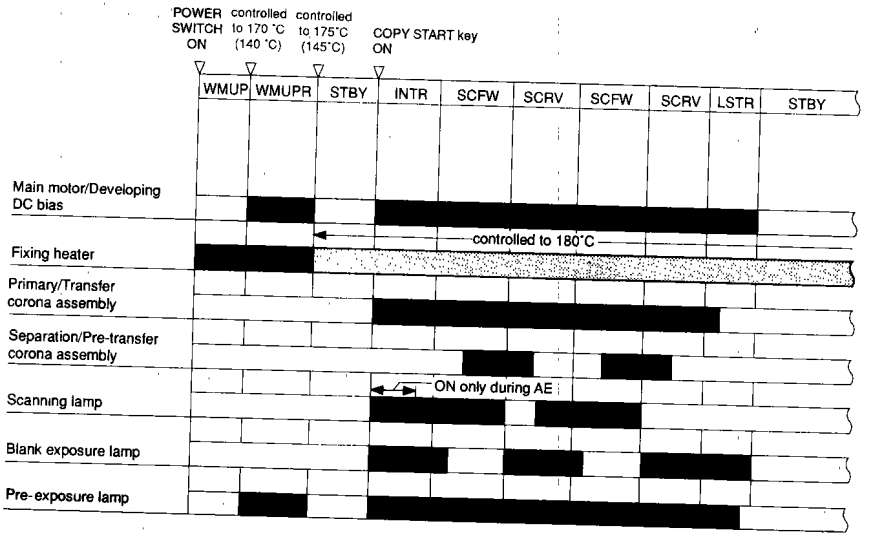

Figure 3-11

Period		Description	Remarks
WMMUP (warm-up)	Between when the machine is switched ON and when the temperature of the fixing roller reaches 170℃ (140℃).	Waits until fixing roller heats.	Fixing heater is ON.
WMUPR (warm-up rotation)	Between when the fixing roller temperature has reached 170℃ (140℃) and when it reaches 175℃(145℃).	Evens out the temperature of the fixing roller	
INTR (initial rotation)	Between when the COPY START key is pressed and when the scanner starts to move forward.	Stabilizes the sensitivity of the drum in preparation for copying operation.	
		Moves the scanner forward about 70 mm for measuring the density of the document; then, the scanner is moved in reverse.	Only when in the AE mode.
SCFW (scanner forward)	While the scanner is moving forward. -The distance over which the scanner moves forward differs depending on the size of the cassette and the selected reproduction ratio. -The speed at which the scanner moves foward differs depending on selected reproduction ratio.	The scanning lamp exposes the document, and the reflected optical image is directed to the photosensitive drum via mirrors and the lens.	The registration signal is generated, thereby moving the copy paper to the transfer assembly.

Table 3-1a

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Period		Description	Remarks
SCRV (scanner reverse)	While the scanner is moving in reverse.	Returns the scanner to the home position in preparation for the next copying run.	
LSTR (last rotation)	From when the copy paper has moved past the delivery sensor after SCRV until about 0.8 sec has passed.	Cleans the drum surface electrostatically.	Discharges the final copy paper.
STBY (standby)	From when LSTR and WMUPR are over until the COPY START key is pressed or the the machine is switched OFF.	Waits for the COPY START key to be pressed or for any key operation.	

Table 3-1b

Note:

The fixing roller temperture during warm-up rotation may be seitched between '140°C - 145°C' and '170°C - 175°C'.

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II. EXPOSURE SYSTEM

A. Varying the Reproduction Ratio

To vary the reproduction ratio across the drum (axial), the zoom lens is moved by the lens drive system, thereby varying the relative distance between the lens and the document and between the lens and the surface of the photosensitive drum as well as the focal distance. This changes the focal distance to suit the reproduction ratio.

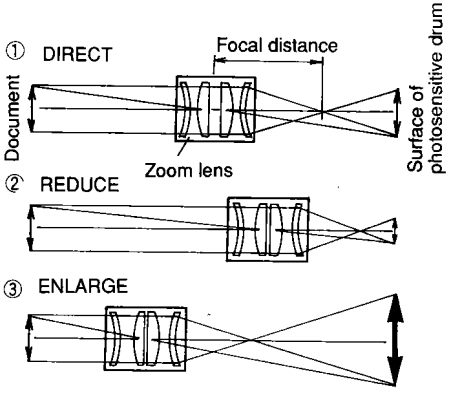

Figure 3-12

The reproduction ratio around the drum (circumferential) is varied by changing the relative speed of the forward movement of the scanner and the rotation speed of the photosensitive drum (image formation speed) by the scanner drive system.

The drum rotation speed remains unchanged; therefore, the copies are reduced when the forward scanner spend is increased, and enlarged if the scanner speed is decreased.

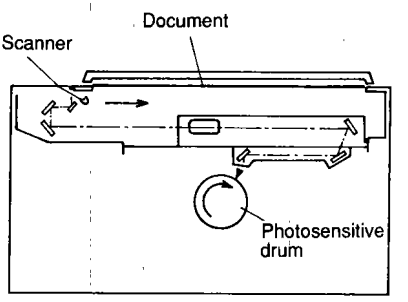

Figure 3-13

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B. Lens Drive System

1. Outline

The lens assembly is positioned by the lens motor (PM2).

When the machine is switched ON, PM2 always rotate in reverse, thereby moving the lens until the signal plate (Figure 3-14) blocks the lens home position sensor (PS4). When the lens reaches the home position, PM2 starts to rotate forward and stops when a specific number of pulses has been generated after the signal plate moved away from the home position sensor; the lens is set to the DIRECT position.

To move the lens to an ENLARGE position (from REDUCE to DIRECT, for example), the motor first rotates in reverse, moving the lens past the position for the selected reproduction ratio; thereafter, the motor rotates forward to stop the lens to the specified position. In other words, the correct positioning of the lens is ensured using forward rotation of the motor.

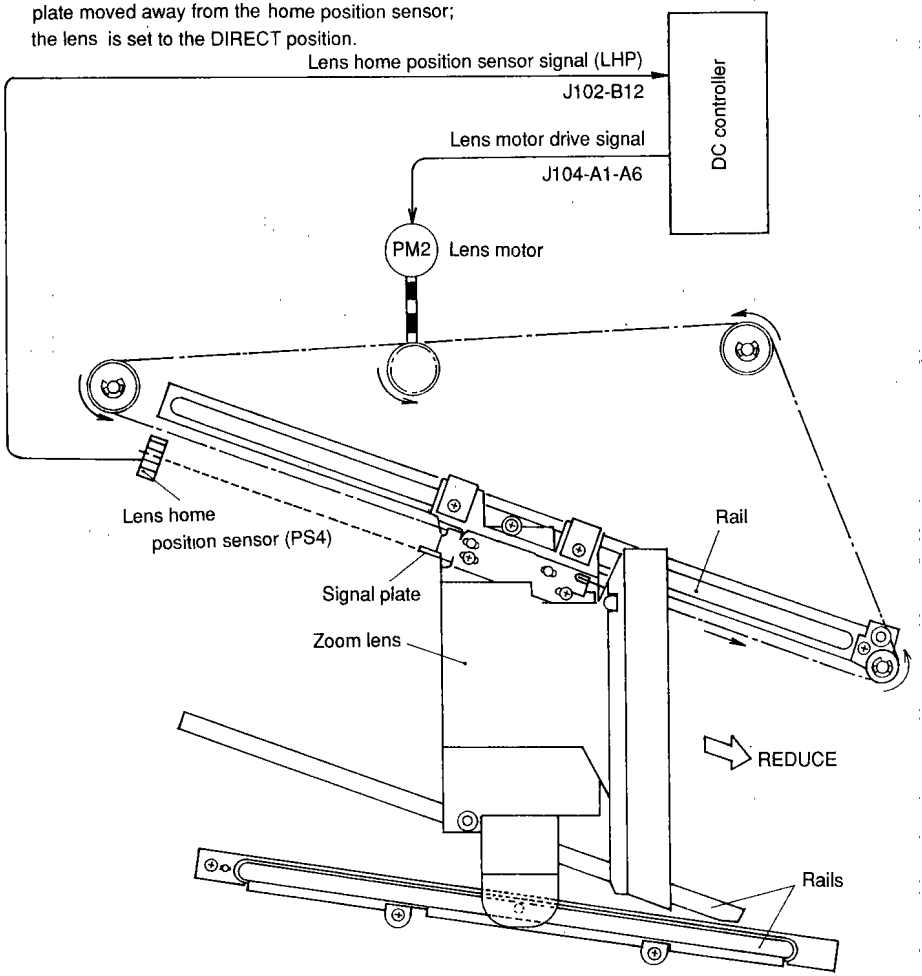

Figure 3-14

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2. Lens Motor Drive Circuit

The lens motor is a stepping motor driven by LNSTB and pulse signal ($\overline{LNA}$, LNA, $\overline{LNB}$, LNB).

The lens motor is driven by 24 V to move the lens.

A 5V voltage is applied to the lens motor when it is at rest to prevent displacement of the lens.

a. Lens Motor at Rest

The motor is stopped and the position of the lens is retained by causing $\overline{LNA}$, LNA, $\overline{LNB}$, and LNB to go '0'.

b. Lens Motor in Operation

When necessary, the motor is ready to start rotating in response to pulses applied to each phase in sequence.

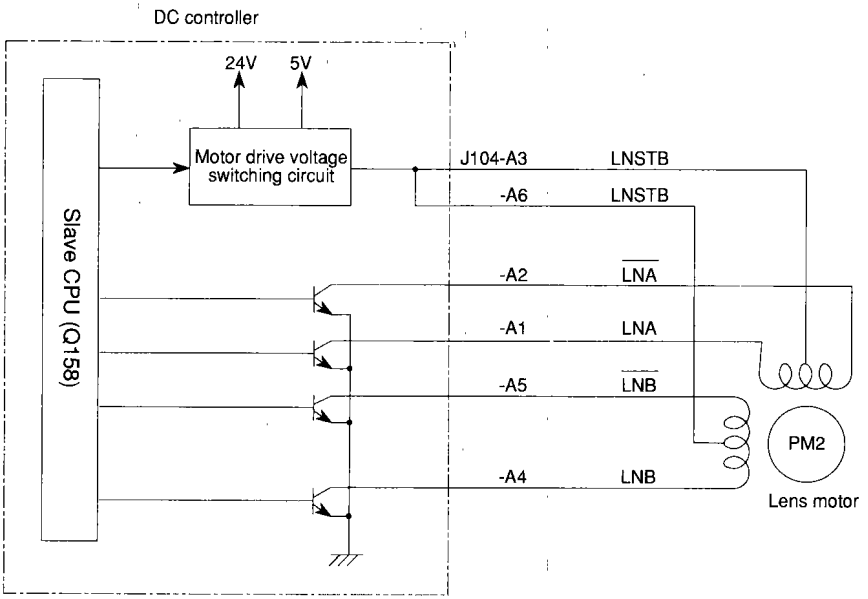

Figure 3-15

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C. Scanner Drive System

1. Outline

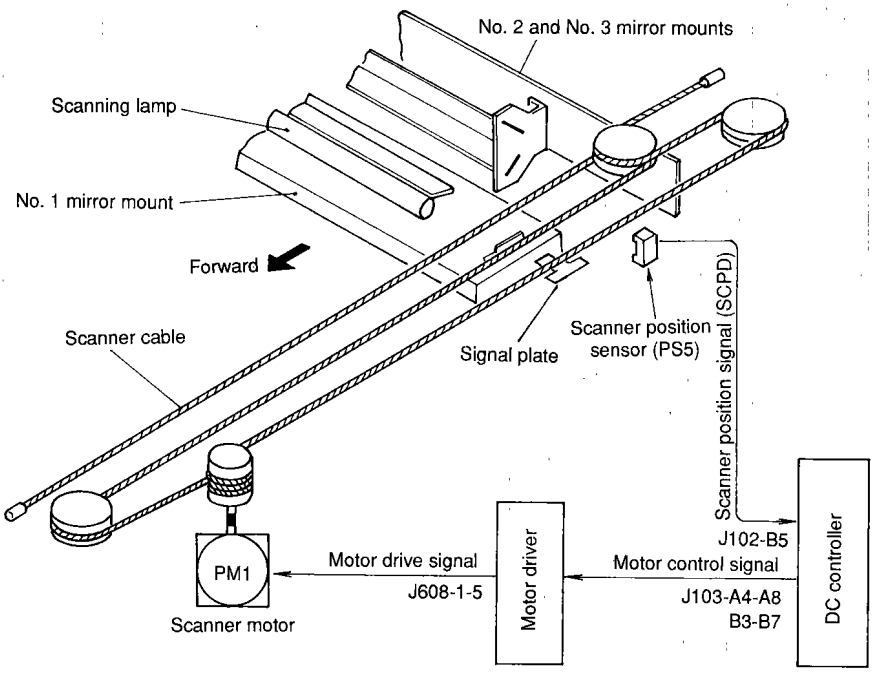

Figure 3-16

The machine's scanner is driven by a stepping motor (PM1).

The speed of the forward movement of the scanner is varied to suit the selected reproduction ratio around the drum.

The speed of the reverse movement of the scanner is constant regardless of the selected reproduction ratio; it is about three times that of the forward movement.

The position of the scanner is identified with reference to the scanner position sensor (PS5).

The distance over which the scanner moves is varied depending on the size of copy paper and the reproduction ratio.

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2. Scanner Position Sensor

The scanner position sensor (PS5) checks the position of the scanner as follows:

a. Home Position Sensor

1) At power-on, the scanner is moved forward.

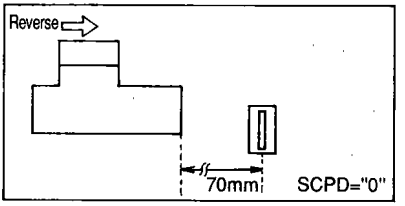

Figure 3-17

2) The scanner is reversed and moved in reverse when the signal plate has moved 70 mm after it left PS5.

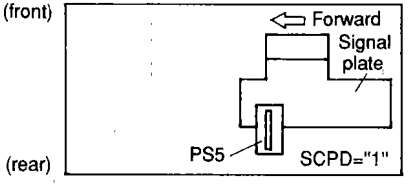

Figure 3-18

3) The scanner is moved in reverse an additional 26 mm from SCPD = ⌐ and is stopped (scanner home position).

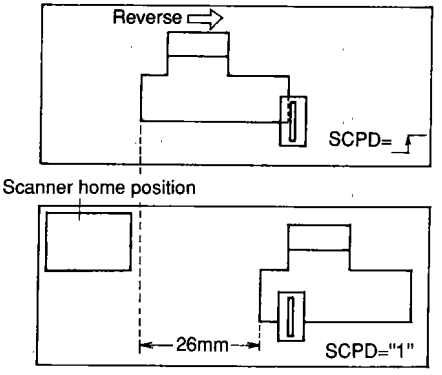

Figure 3-19

Note:

If the signal plate is not at PS5 at power-on (SCPD=0), the scanner is moved in reverse to cause SCPD to go '1' before the above sequence is executed.

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b. Identifying the Leading Edge of the Document

1) The scanner is moved forward from the home position.

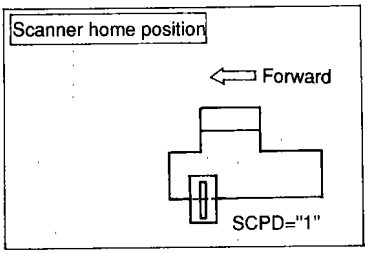
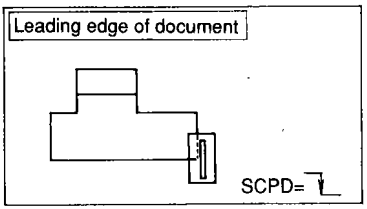


Figure 3-20

2) The point represented by SCPD ( ) is used as the position of the leading edge of the document.



■ Several seconds later, the registration clutch goes ON. This may be changed in the service mode.

Figure 3-21

c. Identifying the Position for AE Scanning

1) The scanner is moved forward farther than the leading edge of the document.

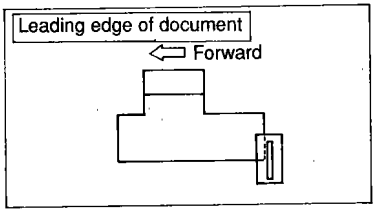


Figure 3-22

2) The point represented after a forward movement of 70 mm is used as the position for AE scanning.

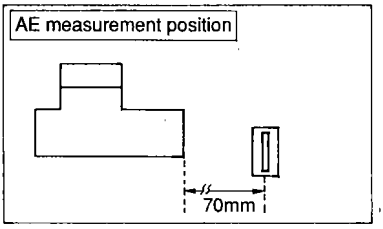


Figure 3-23

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3. Basic Sequence (scanner)

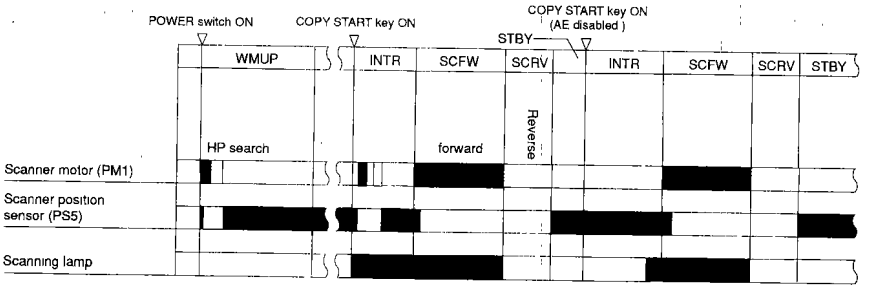

Figure 3-24

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4. Scanner in Two-Page Separation Mode (copy count at 2)

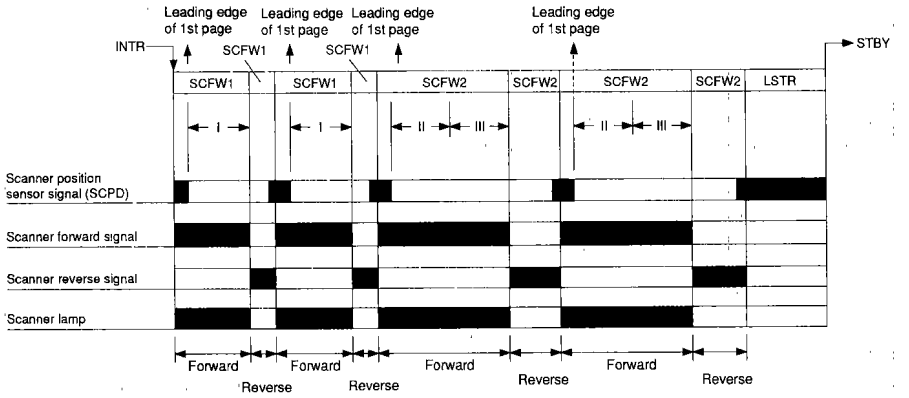

Figure 3-25

Periods represented by I, II, and II, are all based on the leading edge of the 1st page, i.e., the falling edge of PS5.

I. The distance over which the scanner moves from the leading edge of the document depends on the cassette size as in normal copying operations.

II. The same as I; however, if the distance over which the scanner moves forward is 210 mm (100/230V); 216 mm (115V) or more, 210 mm/216 mm will be identified as the leading edge of the 2nd page. If the distance is 210 mm/216 mm or less, the point at which the scanner is reversed in I will be identified as the leading edge of the 2nd page.

III. The same as I.

Note:

The scanner cannot be moved farther than 432 mm from the leading edge of the document (falling edge of PS5); further, the distance is constrained by the selected reproduction ratio. At 200% enlargement, it cannot move more than 216 mm.

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D. Controlling Document Size Identification

1. Outline

The machine is equipped with auto paper selection and auto reproduction ratio selection mechanisms and, to enable these modes, the size of the document must be first identified.

Figure 3-26 shows the three document sensor circuits attached under the copyboard glass.

When the copyboard cover is brought down, the DC controller measures the outputs of the document sensor circuits, and the measurements are used to identify the size of the document as being A3, B4, A4, or B5 (standard sizes).

These document sensor circuits cause LEDs to emit light against the document, and the reflected light is monitored by phototransistors, whose outputs are sent to the DC controller.

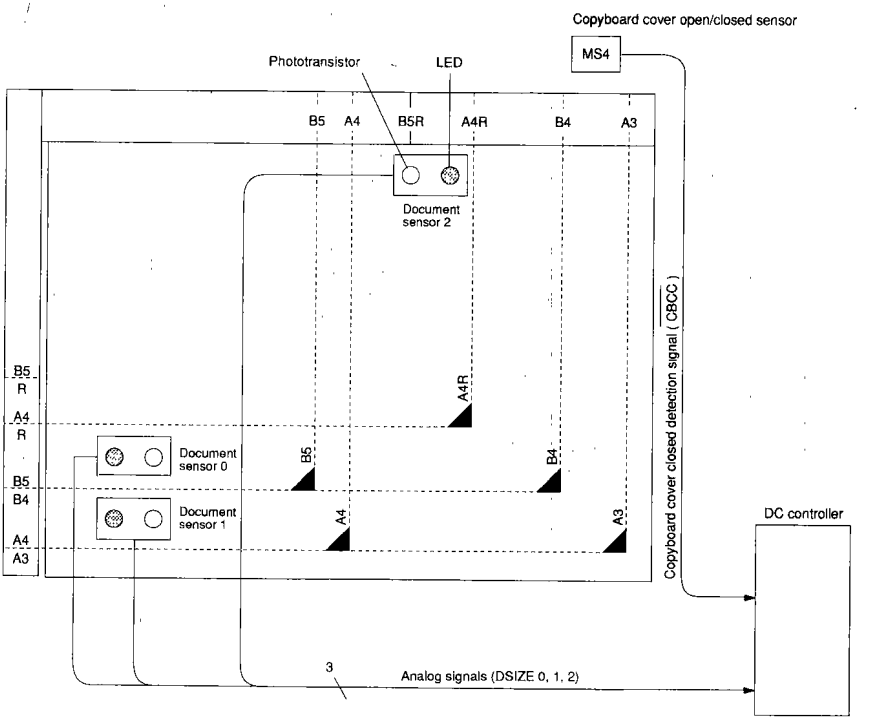

Figure 3-26

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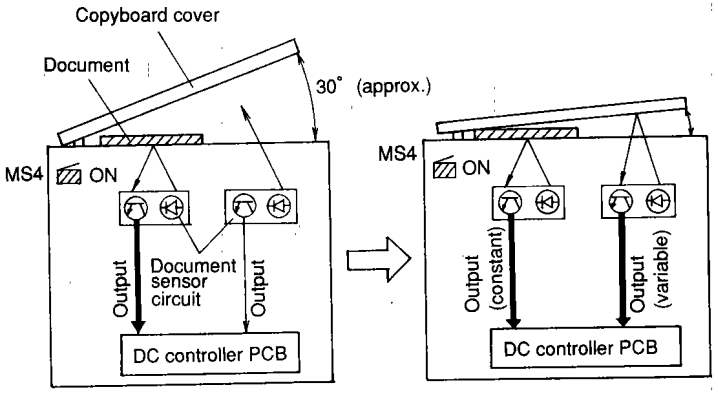
2. Mechanism

The DC controller measures the output of the document sensor circuit at intervals of 0.2 sec between when the copyboard cover open/closed sensor (MS4) goes ON and when the COPY START key is pressed, or for 15 sec after the sensor has gone ON.



The thickness of the arrow represents the level of the output.

Figure 3-27

If a document is present over the sensor, the light reflected by the document is directed to the document sensor circuit; therefore, the output of the sensor circuit is constant regardless of the angle of the copyboard cover.

If no document is present over the sensor, on the other hand, the output of the sensor immediately after MS4 has gone ON is low; when the copyboard cover is closed completely, causing the light reflected by the copyboard sheet to be directed to the sensor circuit, the output increases.

As described, the absence of changes in the output of the sensor circuit is assumed to indicate the presence of a document, and the presence of changes likewise is assumed to indicate the absence of a document.

The above mechanism enables identification of the size of documents mostly consisting of black images.

Note:

i. If the document is thick and, therefore, the copyboard cover cannot be closed completely with MS4 ON, the level of the output will not change regardless of the size of the document. If the three sensor outputs remain the same, the measurement taken as soon as MS4 goes ON is compared against the slice level to identify the size of the document.

ii. If the copyboard cover is open, i.e., MS4 is OFF, the size of the document is identified based on the maximum size of the sheets in the cassettes set in the machine.

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Note:

i. The machine's copyboard cover may be a folding type or an editor type. The angle (30°) shown in Figure 3-28 represents the angle at which MS4 goes ON, and the distance between the end of the copyboard cover and the copyboard glass differs depending on the type of copyboard cover.

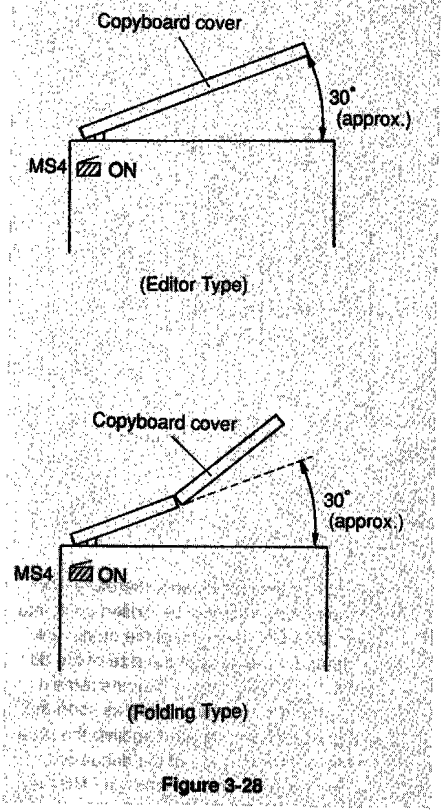

Figure 3-28

3. Size of Document

The DC controller identifies the size of documents based on the combination of the states of document sensor signals (DSIZE0 through 2).

Document sensor signal			Size
DSIZE 0	DSIZE 1	DSIZE 2	
1	1	1	A3
1	0	1	B4
0	0	1	A4R
1	1	0	A4
1	0	0	B5
0	0	0	B5R

- 0: Document absent.
  1: Document present.
- B5R, if none of the sensors detects document.

Table 3-2

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III. IMAGE FORMATION SYSTEM

A. Outline

The machine's image formation system consists of the components shown in Figure 3-29, and the system deals with the following functions:

- Controls the intensity of the scanning lamp.
- Controls the blank exposure lamp.
- Controls the primary/transfer corona current.
- Controls the pre-transfer/separation corona current.
- Controls the developing bias.

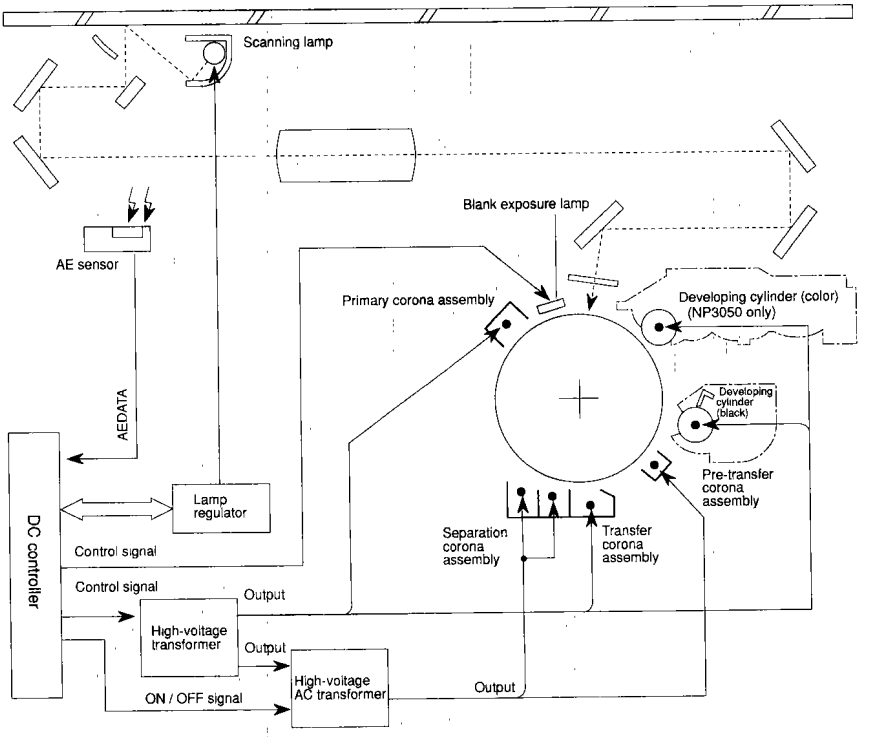

Figure 3-29

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B. Timing Chart (image formation system)

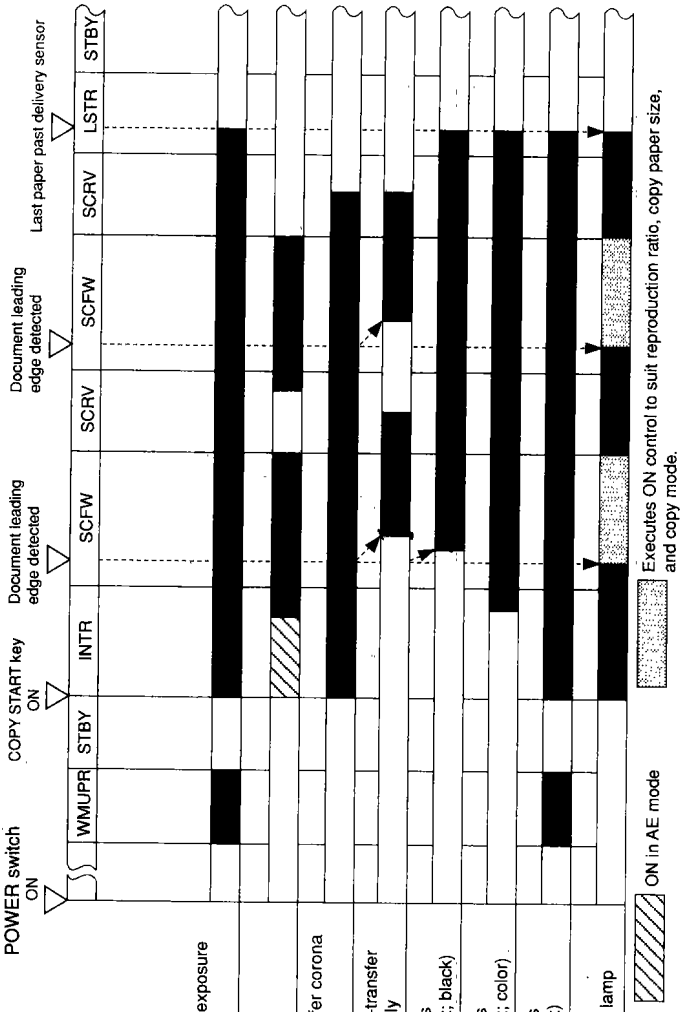

Figure 3-30

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C. Controlling the Intensity of the Scanning Lamp

1. Outline

Figure 3-31 shows the intensity control circuit of the scanning lamp, which has the following functions:

① Turns the scanning lamp ON and OFF.
② Controls the intensity of the scanning lamp.
③ Checks for faults in the scanning lamp.

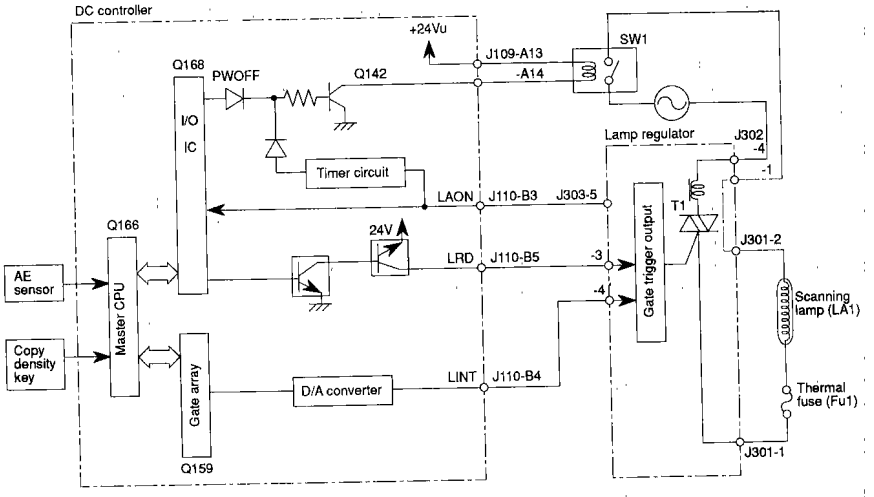

Figure 3-31

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2. Mechanism

a. ON/OFF Control

The lamp regulator drive signal (LRD=1) is generated by the DC controller.

⇩

The gate trigger voltage is applied to the triac (T1) in the lamp regulator, causing the triac to go ON.

⇩

An AC voltage controlled by the LINT signal is applied to the scanning lamp, causing the lamp to go ON.

b. Controlling the Intensity

The intensity adjustment signal (LINT) varies between 10 and 16 V to suit the setting of the COPY DENSITY key or the density of the document (AE mode), and the signal controls the intensity as follows:

The LINT signal is generated by the DC controller.

⇩

The LINT signal is sent to the gate trigger output circuit in the lamp regulator.

⇩

Trigger pulses suited to the level of the LINT signal is sent to the triac (T1).

⇩

The AC power supply to the scanning lamp is controlled.

c. Detecting Faults

When the scanning lamp is ON, it is monitored by the lamp ON signal (LAON).

If the scanning lamp remains ON for 1 second or more despite LRD=0, PWOFF=1 is generated by the I/O IC (Q168), causing SW1 to go OFF; this condition cuts the AC voltage supply to the scanning lamp.

If the DC controller or the lamp regulator suffers a fault and the scanning lamp remains ON for 20 seconds or more, the error is dealt with as follows:

When the scanning lamp is ON, the lamp regulator generates LAON=1.

⇩

If LAON=1 continues for 20 sec or more, the timer circuit generates '1'.

⇩

The transistor (Q142) goes ON, causing SW1 to go OFF.

⇩

The scanning lamp goes OFF.

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3. Automatic Exposure Control (AE)

a. Outline

When copies are made in the AE mode, the intensity of the scanning lamp is controlled automatically to suit the density of the document.

- The level of the intensity is indicated on the copy density display of the control panel.

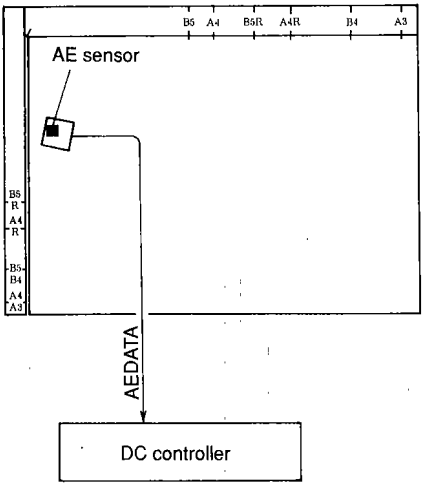

Figure 3-32

b. Mechanism in AE Mode

The scanner is controlled as follows in the AE mode:

The COPY START key is pressed.

⇩

The scanning lamp goes ON.

⇩

When the intensity of the scanning lamp has stabilized, the scanner moves forward to the AE position; about 96 mm past the home position.

⇩

The light reflected by the document is read by the AE sensor (photodiode) at the AE position.

⇩ ■ The scanner returns to the home position.

The DC controller computes the optimum intensity for the scanning lamp based on the input value and sends the result to the lamp regulator in the form of the intensity adjustment signal (LINT).

⇩

The scanning lamp goes ON at the optimum intensity to expose the document.

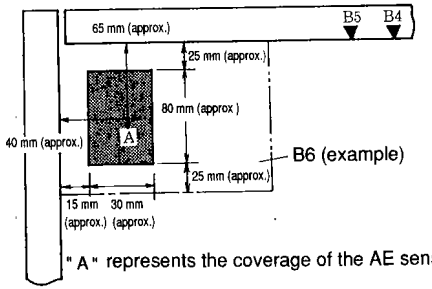

Figure 3-33 Area of AE Measurement

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c. AE Control Circuit

See Figure 3-34 for a diagram of the AE control circuit.

The light reflected by the document enters the AE sensor.

⇩

The output voltage of the photodiode (Q751) is sent to the DC controller as AEDATA (7 to 10 V).

⇩

The DC controller computes the optimum intensity for the scanning lamp for copying operation based on the input value and sends the result to the lamp regulator as LINT.

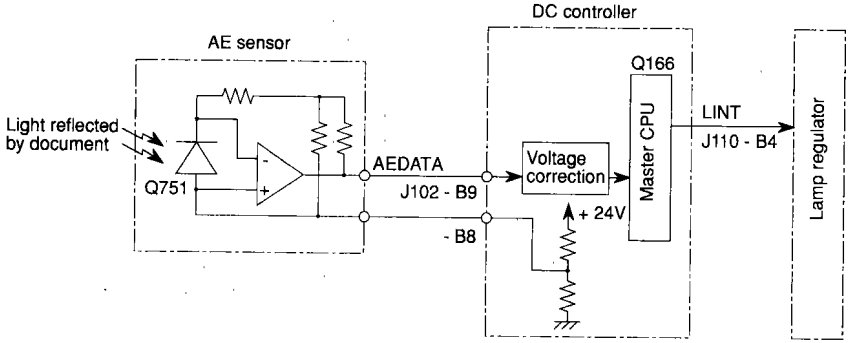

Figure 3-34

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4. Intensity (AE) Control

Table 3-3 discusses the items that can be adjusted in the service mode using the scanning lamp intensity control circuit.

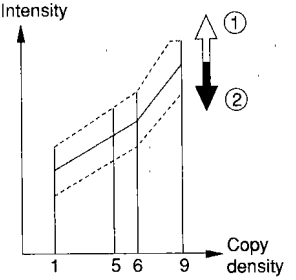
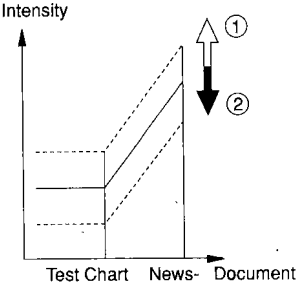
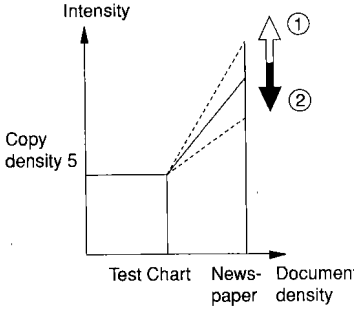
Item	Adjustment	Description	Remarks
✱ 3 ✱ LIGHT–5	Optimum exposure (copy density 5)	(manual) Intensity  (AE) Intensity  	① If the setting is increased in the service mode, the intensity during copying operation will increase, causing the copy to be lighter. ② If the setting is decreased in the service mode, the intensity during copying operation will decrease, causing the copy to be darker. (effective in both AE and manual)
✱ 3 ✱ AE_SLOP	AE slope	Intensity  	① If the setting is increased in the service mode, copies of a newspaper will be lighter. ② If the setting is decreased in the service mode, copies of a newspaper will be darker.

Table 3-3 a

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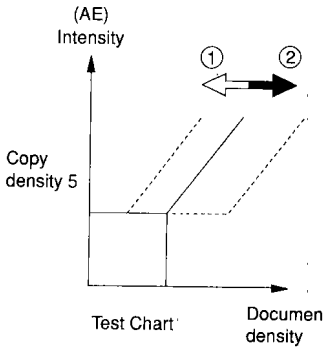
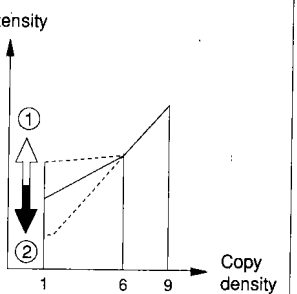
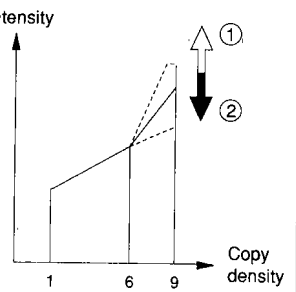
Item	Adjustment	Description	Remarks
✱3✱ AE_LIGHT	AE scan (intensity)		① If the setting is decreased in the service mode, the AE copies will be lighter. ② If the setting is increased in the service mode, the AE copies will be darker.
✱3✱ LIGHT-1	Copy density 6 or lower		① If the setting is decreased in the service mode, the intensity at copy density 6 or lower will be increased. ② If the setting is increased in the service mode, the intensity at copy density 6 or lower will be decreased.
✱3✱ AE_LIGHT-9	Copy density 6 or higher		① If the setting is increased in the service mode, the intensity at copy density 6 or higher will be increased. ② If the setting is decreased in the service mode, the intensity at copy density 6 or higher will be decreased.

Table 3-3b

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D. Controlling the Primary /Transfer Corona Current and Grid Bias

1. Outline

Figure 3-35 shows the primary/transfer corona current and grid bias control circuit, which has the following functions:

- Turns the primary/transfer corona current ON and OFF.
- Controls the primary corona current.
- Switches the value of the transfer corona current.
- Controls the grid bias of the primary corona assembly.

A bias identical to that applied to the grid wire is applied to the shield plate of the primary corona assembly to limit soiling of the primary corona wire.

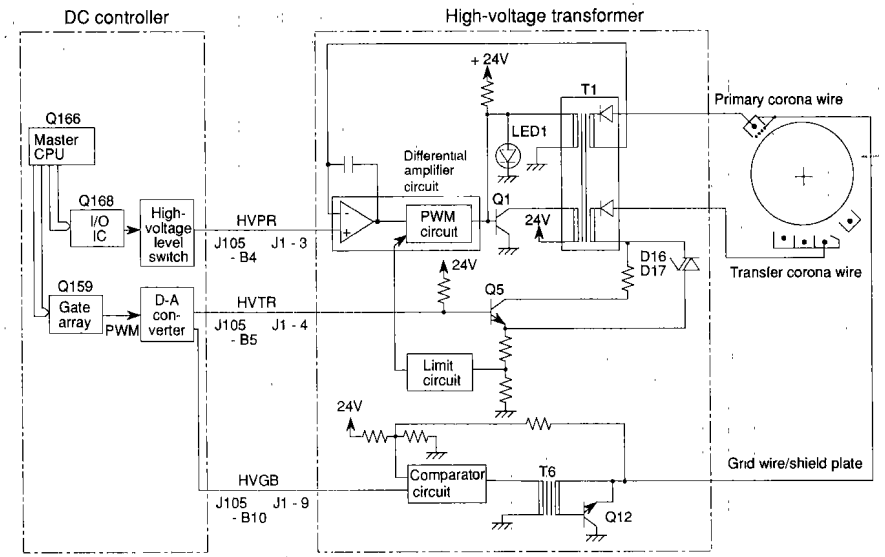

Figure 3-35

2. Mechanism

a. ON/OFF Control

The primary/transfer current is turned ON and OFF by the primary corona level control signal (HVPR) generated by the DC controller.

The output from the I/O IC causes HVPR to assume 14.0 V.

⇩

Pulses are generated by the PWM circuit.

⇩

The transformer (T1) goes ON.

⇩

LED1 goes ON; corona current for the primary corona assembly is generated; and corona current for the transfer corona assembly is generated.

b. Constant Current Control

If the corona current is too intense from the primary corona because of changes in the environment, the level of the feedback signal to the differential amplifier circuit increases; this causes the output of the differential amplifier circuit to decrease, causing the corona current from the primary/transfer corona assembly to decrease to maintain a specific current level.

If the corona current is greater than a specific level from the transfer corona assembly, the varistors (D16, D17) go ON, sending signals to the limiter circuit to control the highvoltage output.

c. Controlling the Transfer Corona Current

Making two-sided or overlay copies causes the resistance of copy paper to vary, necessitating variation of the transfer corona current; the level of the current is varied by the transfer corona level control signal (HVTR) generated by the DC controller.

The duty ratio of the pulse output from the gate array (Q159) on the DC controller changes.

⇩

The level of HVTR changes.

The current between the collector and the emitter of the transistor (Q5) changes.

⇩

The output from the transformer for the transfer corona assembly changes.

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E. Controlling the Separation /Pre-Transfer Corona Current

1. Outline

Figure 3-36 shows the separation/pre-transfer corona current control circuit; the circuit has the following functions:

- Turns the separation/pre-transfer corona current ON and OFF.
- Maintains the separation/pre-transfer corona current constant.
- Varies the separation corona current.

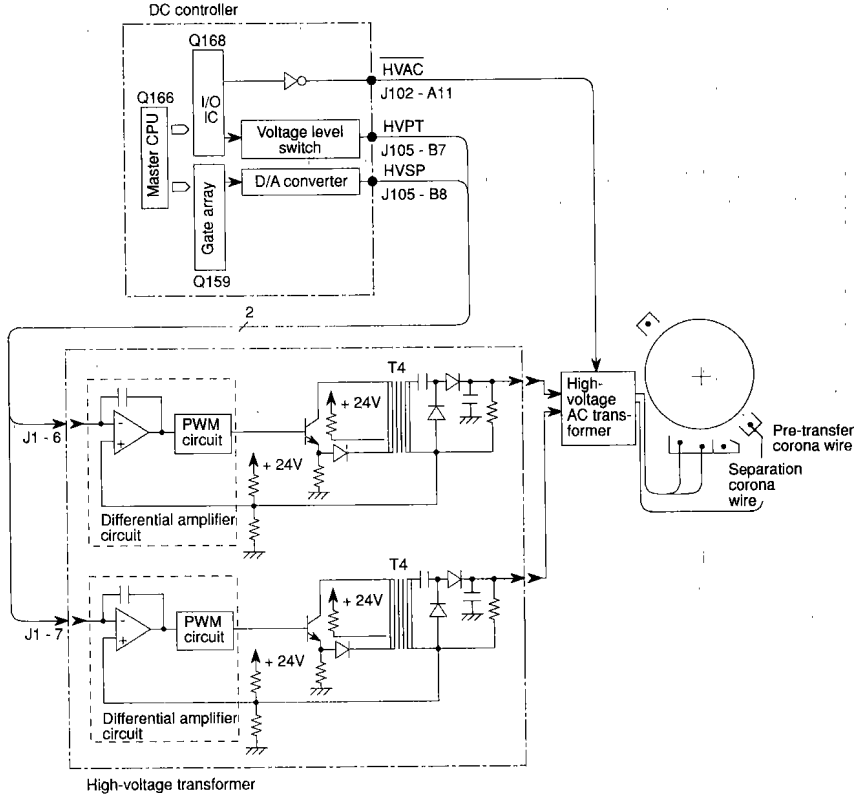

Figure 3-36

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2. Mechanism

a. ON/OFF Control

The separation/pre-transfer corona current is turned ON and OFF by the following three signals generated by the DC controller:

- Separation corona level control signal (HVSP)
- Pre-transfer corona level control signal (HVPT)
- AC transformer drive signal ($\overline{\text{HVAC}}$)

(DC component)

The output of the I/O IC causes HVPT to assume 12.0 V, and the output of the gate array causes HVSP to assume 8 to 16 V.

⇩

Pulses are generated by the PWM circuit.

⇩

The transformer (T4) for the separation corona assembly and the transformer (T3) for the pre-transfer corona assembly are driven.

(AC component)

$\overline{\text{HVAC}}$ goes '0'.

⇩

The high-voltage AC transformer is driven, and the corona current for the separation/pre-transfer corona assemblies is generated.

b. Constant Current Control

Like the high-voltage primary output, the current is controlled to a constant level based on the level of the feedback signal from the transformer.

c. Controlling the Separation Corona Current

When two-sided or overlay copies are made, the resistance of copy paper varies; as such, the corona current is controlled by the separation corona level control signal (HVSP) generated by the DC controller.

The high-voltage AC transformer is driven, and the corona current for the separation/pre-transfer corona assemblies is generated.

⇩

The level of HVSP changes.

⇩

The output (duty ratio) of the PWM circuit changes.

⇩

The output of the transformer (T4) for the separation corona assembly is controlled.

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F. Controlling the Developing Bias

1. Outline

Figure 3-37 is a diagram of the developing bias control circuit; the circuit has the following functions:

- Turns the developing bias (AC component) ON and OFF.
- Turns the developing bias (DC component) ON and OFF.
- Controls the voltage level of the developing bias (DC component).

The above control mechanisms are executed by the following two signals:

- Developing AC bias output signal (HVBAC)
- Developing DC bias level control signal (HVBDC)

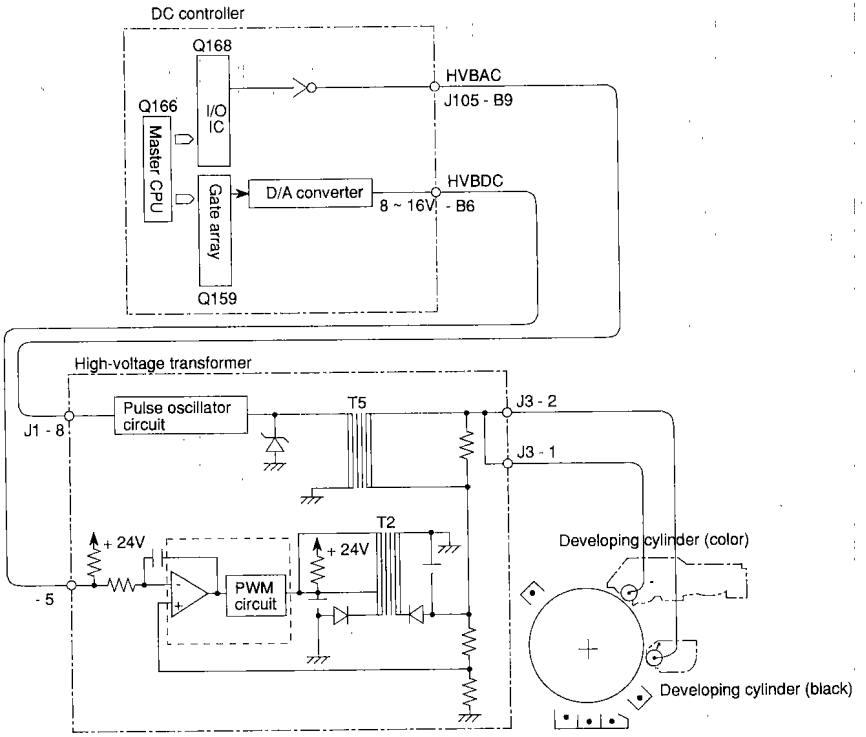

Figure 3-37

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2. Mechanism

a. ON/OFF Control

(Developing bias AC component)

HVBAC is generated.

⇩

Pulses are generated by the oscillator circuit.

⇩

The high-voltage transformer (T5) for the AC bias is driven, and an AC bias is generated.

(Developing bias DC component)

The output from the gate array causes HVBDC to assume 8 to 16 V.

⇩

Pulses are generated by the PWM circuit.

⇩

The high-voltage transformer (T2) for the DC bias is driven, and a DC bias is generated.

b. Controlling the Voltage Level of the DC Bias

The level of the DC bias is varied to suit the setting in the service mode and user mode.

The duty ratio of the pulse output generated by the gate array (Q159) in the DC controller changes.

⇩

The level of HVBDC changes.

⇩

The output (duty ratio) of the PWM circuit changes.

⇩

The output from the high-voltage transformer (T2) for the DC bias is controlled.

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3. Adjustment

Table 3-4 lists the items that can be adjusted in the service mode using the developing bias control circuit. Check that the setting for the copy density correction mechanism (*4* in asterisk mode) is at the center before making any of the adjustments.

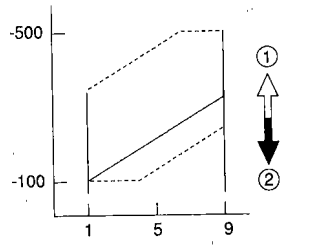
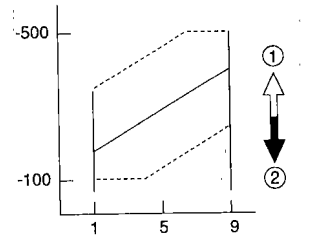
Item	Adjustment	Description	Remarks
✱3✱ BIAS_BK	Developing bias (DC component; black copy)	Developing bias (DC component)  COPY DENSITY CORRECTION key	① If the setting is increased in the service mode, the DC component of the developing bias during black copying operation will be increased, causing the copy to be lighter. ② If the setting is decreased in the service mode, the DC component of the developing bias during black copying operation will be decreased, causing the copy to be darker.
✱3✱ BIAS_C	Developing bias (Dc component; color copy; NP3050 only)	Developing bias (DC component)  COPY DENSITY CORRECTION key	① If the setting is increased in the service mode, the DC component of the developing bias during color copying operation will be increased, causing the color copy to be lighter. ② If the setting is decreased in the service mode, the DC component of the developing bias during color copying operation will be decreased, causing the color copy to be darker.

Table 3-4

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G. Blank Exposure Lamp

1. Outline

The blank exposure lamp exposes areas of the drum surface to eliminate the charges in non-image areas as needed by the selected copy mode.

The blank exposure lamp consists of an array of 124 LEDs.

While the drum is rotating and the document is not exposed, all 124 LEDs of the blank exposure lamp remain ON.

When the document is exposed, the individual LEDs are kept ON or OFF depending on the selected copy size and copy modes.

The two LEDs (sharp-cut) each at both ends are controlled by a static method and kept ON while the drum is rotating. All other LEDs are arranged in a matrix and are controlled by a dynamic method.

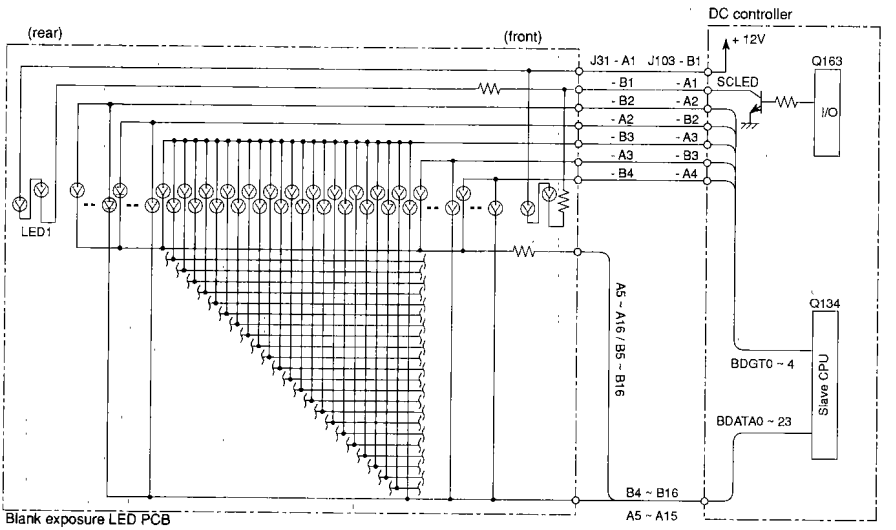

Figure 3-38

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2. LED Control

a. Control When Making REDUCTION Copies

While the document is exposed when making reduction copies, LEDs (rear) in numbers suited to the reproduction ratio are kept ON to eliminate the non-image areas. If the reproduction ratio is set to 90%, for example, 15 LEDs at the farthest end go ON.

b .Control When Making DIRECT Copies

While the document is exposed when making DIRECT copies, LEDs in numbers suited to the cassette size are kept ON to eliminate charges on the portion of the drum not in contact with the copy paper. When using a fixed reproduction ratio or when using a standard size sheet in the DIRECT mode, a non-image area with a width of about 2.0 mm is created at the rear and the front of the image.

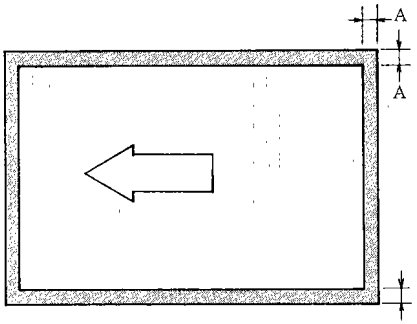
c. Control when in Frame Erasing Mode

LEDs are keep ON so that a non-image areas with a width of about 7mm is created along the sides of the copy sheet.

Note:

In the manual mode, the frame erasing mechanism is controlled based on 'large size' (297X432 mm) regardless of the size of the selected copy paper.

If the universal cassette is used without specifying the paper size, the sheet frame erasing mechanism is controlled based on the size of the largest copy paper that can fit in each cassette.



A = 7 mm (approx.)

Figure 3-39

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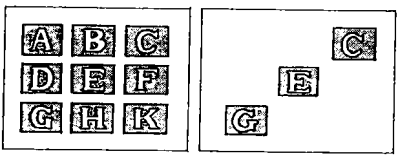
d. Control in Area Specification and Image Conversion Mode

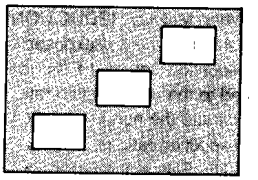
While the document is exposed in the image conversion mode, LEDs are turned ON to suit the size and the position of the specified area and the image conversion mode.

If the area shown in diagram A is specified to make a copy as shown in diagram B in the image conversion mode, LEDs are turned ON so that the shaded areas in Figure 3-42 will be free of toner.



(A) Document (B) Copy

Figure 3-40



Area Covered by LEDs

Figure 3-41

To make a copy in which C, E, and G of the document shown in Figure 3-40 (A) are black and the remaining area in red using image conversion, the overlay mode is used so that the document is exposed twice for a single copy.

During the first exposure of the document, LEDs corresponding to the shaded areas on the copy shown in Figure 3-41 are turned ON, and black development is executed.

During the second exposure of the document, LEDs corresponding to the shaded areas on the copy shown in Figure 3-42 are turned ON, and red development is executed.

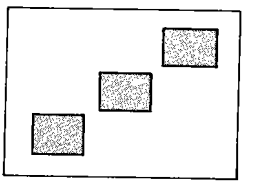


Figure 3-42

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H. Developing Assembly / Cleaning Assembly

1. Outline

The black developing assembly and the CD unit are engaged and disengaged by the black developing assembly lock clutch.

When the black developing assembly or the CD unit is engaged, the other remains disengaged.

The black developing assembly, CD unit, and drum cleaning assembly are driven by the main motor; drum gears are used to transmit the drive.

The waste toner scraped by the cleaning blade is forwarded for collection inside the photosensitive drum.

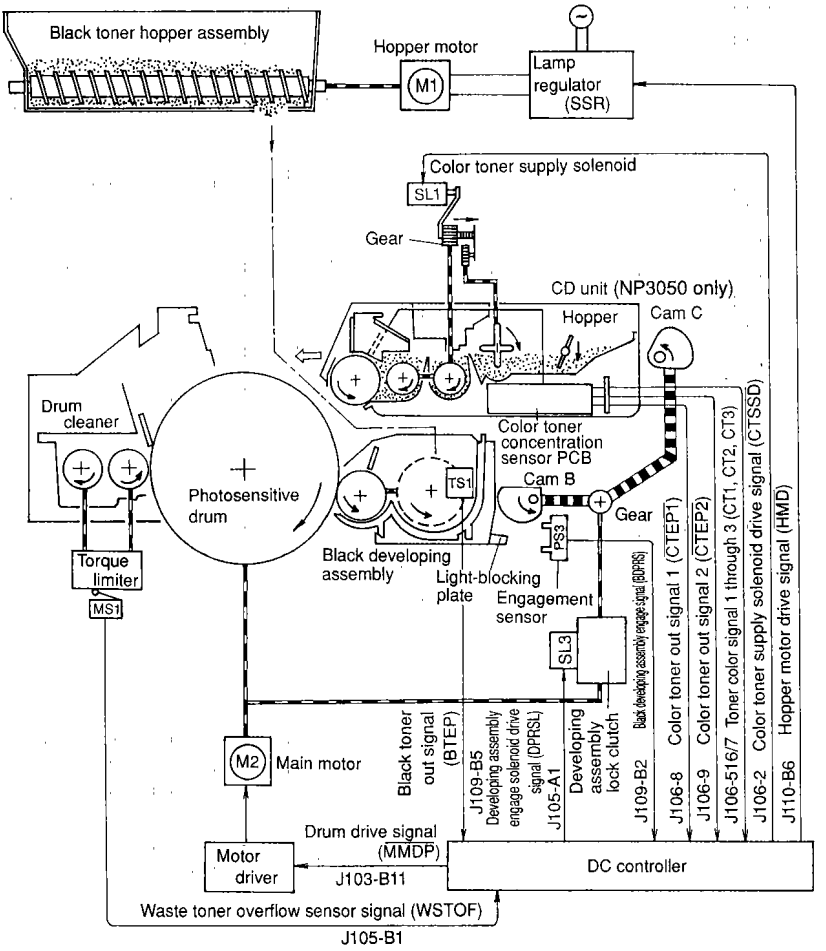

Figure 3-43

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2. Checking and Supplying Black Toner

The level of the black toner inside the black developing assembly is monitored by the toner sensor (TS1).

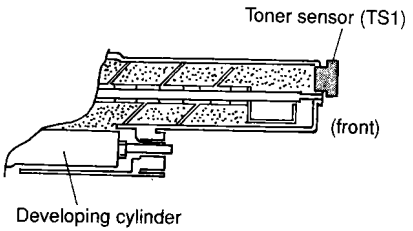

Figure 3-44 (top view)

The toner sensor is a piezoelectric oscillator. When no toner is present, the oscillator oscillates at several kHz, causing the output of the sensor to go '0'. When toner is present, the oscillation stops, causing the output of the sensor to go '1'.

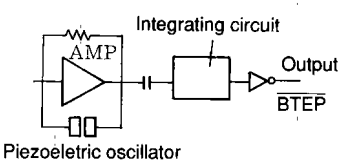

Figure 3-45

The toner detection/supply mechanism works as follows:

The black toner inside the black developing assembly starts to run out.

⇩

The output of the toner sensor (BTEP) goes '0'.

⇩

2.5 sec thereafter, the hopper motor starts to rotate, causing toner to move from the hopper assembly to the black developing assembly.

⇩

The output of the toner sensor (BTEP) goes '1'.

⇩

1.0 sec thereafter, the hopper motor stops.

The detection mechanism is used only for black copies and triggered when the main motor goes ON.

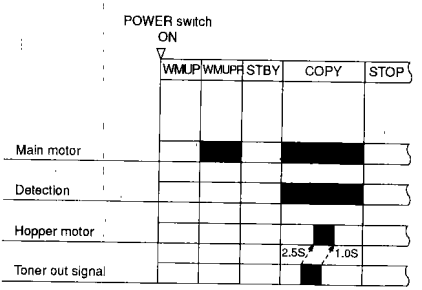

Figure 3-46

The stirring screw inside the black developing assembly is driven by the main motor; therefore, if the hopper motor was rotated with the main motor at rest, toner would clog the assembly. To avoid such a problem, the hopper motor is rotated only when the main motor is rotating.

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The following mechanism is initiated when the hopper runs out of black toner:

$\overline{BTET}$=0 causes the hopper motor to rotate.

⇩

Without $\overline{BTET}$=1, the hopper motor continues to rotate.

⇩

The copy run is completed, and the hopper motor stops; *a* seconds after $\overline{BTET}$=1→ 0.

⇩

The next copying run is started; with $\overline{BTET}$=0, the hopper motor starts to rotate.

⇩

b seconds after the copying run is started and when a+b=60 sec, the hopper motor stops.

⇩

After the copy run for paper is completed, a warning message is indicated on the control panel display.

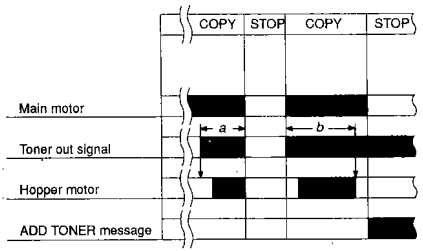

Figure 3-47

To resume copying after the ADD TONER message is indicated, open the machine's front door, supply toner, and then close the front door.

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3. Checking the Concentration of Color Toner (NP3050 only)

a. Outline

The toner concentration sensor consists of a lamp and a photodiode; the lamp exposes the toner on the developing cylinder, and the light reflected by the toner is measured and identified as the concentration of the toner.

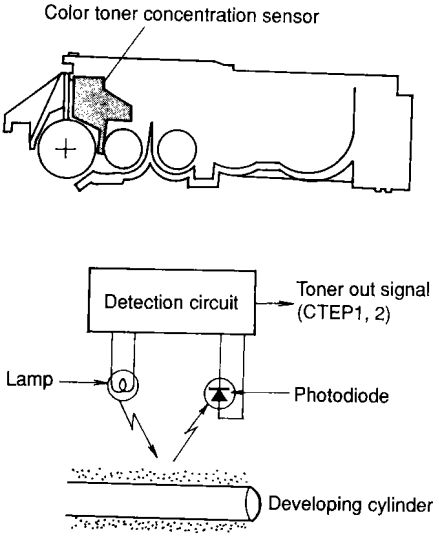

Figure 3-48

The type (color) of the CD unit is identified based on the state of the toner color signals sent by the color toner concentration sensor circuit to the DC controller; see Table 3-5.

During installation of the CD unit, cut the jumper wires (JP851 through JP853) on the color toner concentration sensor circuit to suit the type (color) of the CD unit.

Signal	Red	Blue	Green	Brown	CD unit absent
Toner color signal 1 (CT1) JP851	0	1	0	1	1
Toner color signal 2 (CT2) JP852	0	0	1	1	1
Toner color signal 3 (CT3) JP853	0	0	0	0	1

Table 3-5

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b. Color Toner Concentration Sensor Circuit

(1) Outline

The toner inside the CD unit consists of color toner and carrier.

When copies are made, only color toner adheres to the drum; since the carrier is black, the toner will look increasingly darker as copies are made, enabling the sensor to check the concentration, i. e., the level of color toner.

(2) Mechanism

Figure 3-49 shows the sensor circuit. The light coming directly from the lamp and the light reflected by the developing cylinder are compared to measure the concentration of the toner.

This method enables detection of the toner concentration independent of the fluctuations in the lamp intensity.

As color toner is consumed, the toner concentration decreases.

⇩

The reflected light decreases, causing the output of the operation amplifier (Q851-2) to decrease.

⇩

The levels of VA through AD decreases.

⇩

When Vref>VC, C $\overline{\text{CTEP1}}$=0 is generated.
When Vref>VA, C $\overline{\text{CTEP2}}$=0 is generated.

⇩

The hopper assembly inside the CD unit supplies toner.

■ For the toner supply mechanism initiated by the toner out signal ($\overline{\text{CTEP1}}$, $\overline{\text{CTEP2}}$), see p. 3-51.

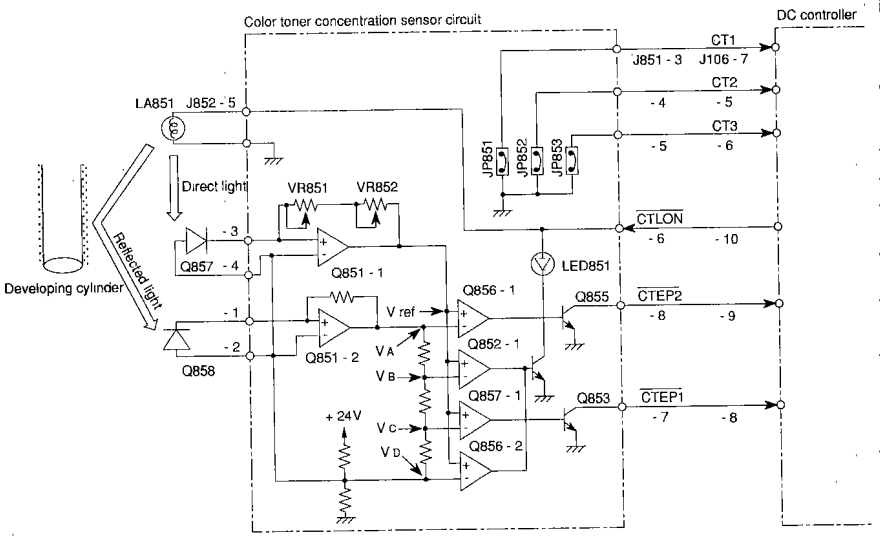

Figure 3-49

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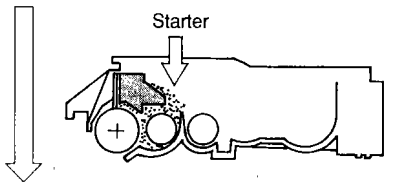
(3) Setting the Reference Voltage (Vref)

It is important to set the output voltage (Vref) to the reference voltage when installing the CD unit.

■ The serviceman pours starter.

Toner with an optimum concentration is deposited on the developing cylinder.



The output voltage (VA through VD) by the reflected light assumes a level compatible with the optimum concentration.

⇩

■ The serviceman adjusts VR851 (coarse)/VR852 (fine).

VB>Vref>VD.

⇩

LED851 goes ON.

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c. Supplying Color Toner

The CD unit supplies toner based on the output of the toner out signal (CTEP1, CTEP2).

When the concentration of the toner falls below a specific level, the color toner supply solenoid (SL1) goes ON to supply toner from the hopper assembly inside the CD unit to the cylinder assembly.

CTEP1: output when a small amount of toner has been used; copying resumes immediately after the supply operation.

CTEP2: output when a large amount of toner has been used; since a large amount of toner is supplied, idle rotation is executed for four seconds to mix the toner and the carrier.

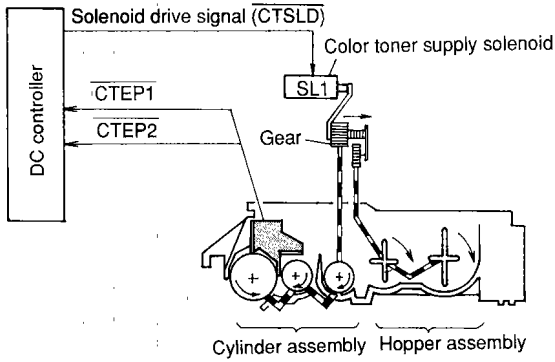

Figure 3-50

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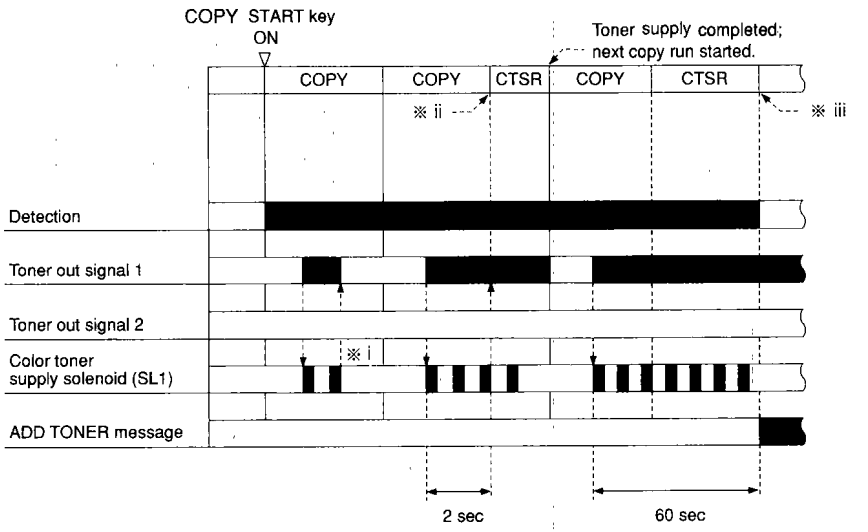

i. The color toner supply solenoid operates intermittently every 1.6 sec.
ii. With output of the toner out signal 1 for 2 sec or more, the copying operation is stopped for toner supply operation; copying operation resumes when toner out signal goes OFF.
iii. With output of the toner out signal for 60 sec or more, the condition is identified as the absence of toner in the hopper assembly and the ADD TONER message is indicated.

Figure 3-51

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If great amounts of toner are used in a short period of time (for solid red copies, for example), the sequence of operation will be as follows:

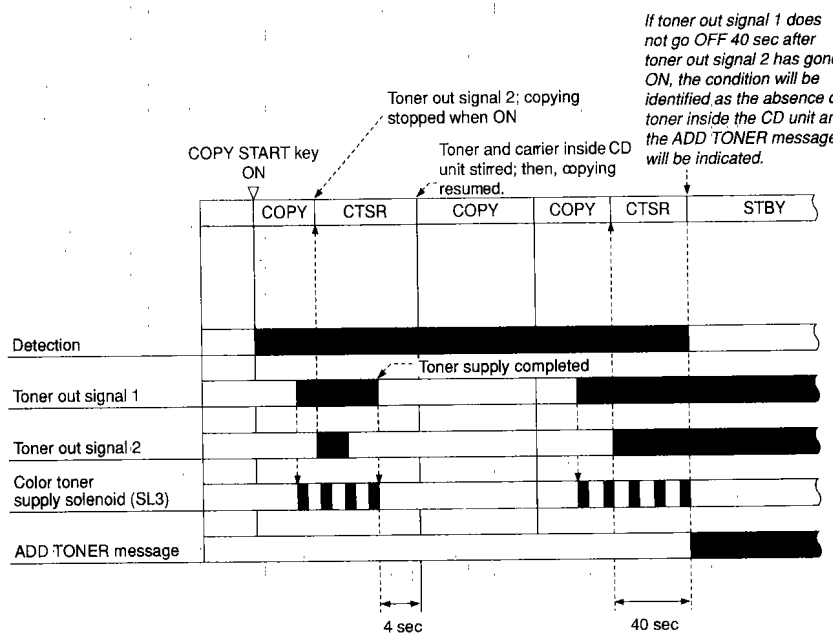
If toner out signal 1 does not go OFF 40 sec after toner out signal 2 has gone ON, the condition will be identified as the absence of toner inside the CD unit and the ADD TONER message will be indicated.
Toner out signal 2; copying stopped when ON
COPY START key ON
Toner and carrier inside CD unit stirred; then, copying resumed.
COPY
CTSR
COPY
COPY
CTSR
STBY
Detection
Toner supply completed
Toner out signal 1
Toner out signal 2
Color toner supply solenoid (SL3)
ADD TONER message
4 sec
40 sec

Figure 3-52

To resume copying after the ADD TONER message is indicated, open the machine's front door, supply toner, and then close the front door.

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4. Checking Waste Toner

When the main motor rotates, its drive is transmitted to the drum gear, cleaning roller gear, screw gear, coupling, and feedscrew in the order named. The feedscrew is used to carry waste toner collected by the cleaning roller to the inside of the photosensitive drum.

The coupling is forced against the screw gear by a spring for transmission of drive.

When the inside of the photosensitive drum and the pipe becomes full of toner, the rotation of the feedscrew starts to drag, pushing up the coupling and cutting off the drive to the feedscrew and, at the same time, the lever presses the microswitch.

The display indicates the 'DISPOSE OF TONER' message; advise the user to place a service call when this message appears.

Note:

Copies may still be made after the message is indicated; waste toner, however, will start to fall into the feeder assembly after making an additional 200 copies or so. It is important to replace the drum as soon as possible.

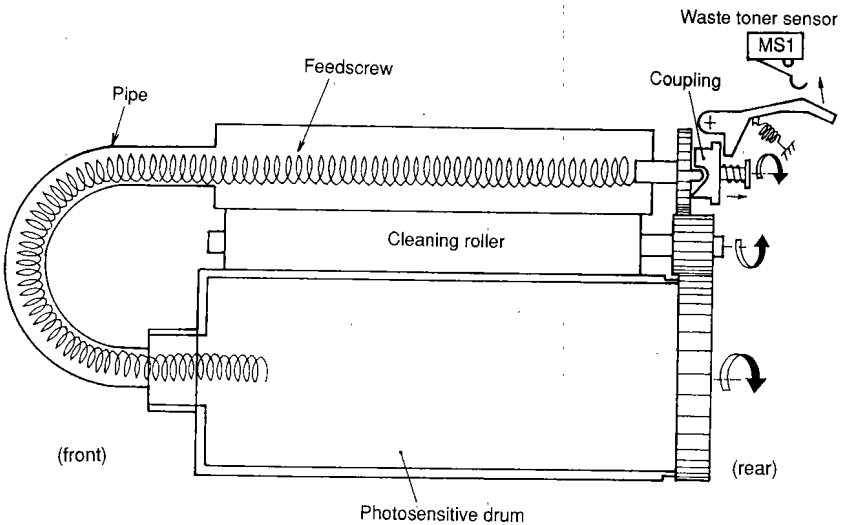

Figure 3-53

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I. Cleaning the Primary Corona Wire (automatic)

1. Outline

The machine is equipped with an automatic cleaning mechanism for the primary corona assembly. The cleaning mechanism is initiated if the temperature of the fixing assembly is 100°C or less when the machine is switched ON.

2. Cleaning the Primary Corona Wire (automatic)

If the temperature of the fixing roller is 100°C or less when the machine is switched ON, the cleaner drive motor (M3) rotates forward to move the cleaner forward. After rotating foward for 20 seconds, thereby cleaning the wire to the rear until the cleaner butts against the cleaner rear sensor, the drive motor rotates in reverse to move the cleaner in reverse. The drive motor is stopped after 20 seconds, when the cleaner reaches the home position sensor (MS5) attached to the front of the drum guide and causes it to go '1'.

If the home position sensor signal goes '1' within 10 seconds after the cleaner has started to move in reverse or if the home position sensor signal does not go '1' after 40 seconds or more, the condition is identified as a cleaning fault, and a warning message is indicated (service mode).

Note:

If the cleaner home position sensor is not ON when the machine is switched ON, the cleaner is moved in reverse until the sensor goes ON; thereafter, cleaning will be executed if the temperature of the fixing roller is 100°C or less.

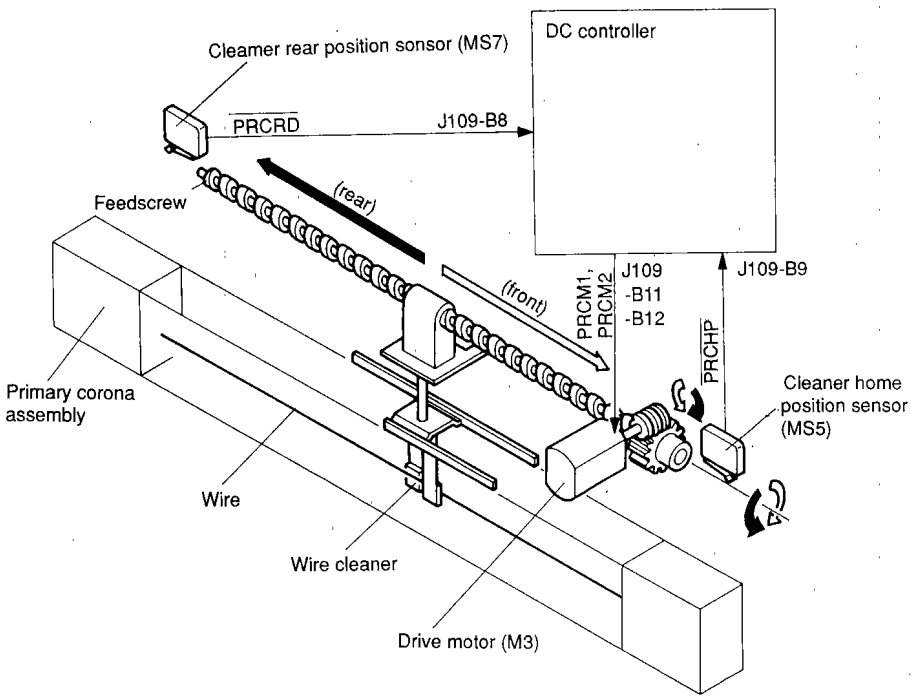

Figure 3-54 Automatic Cleaning Meckamism for Primary Corona Assembly

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J. Cleaning the Transfer /Separation Corona Wire (automatic)

The machine has an automatic cleaning mechanism for the corona wire of the transfer/separation corona assembly.

Like that of the primary corona wire, the cleaning motor, the cleaner home position sensor, and the cleaner rear sensor are used to drive and monitor the cleaner.

The conditions and the time for and during which the mechanism is activated are identical to those for the transfer/separation corona wire.

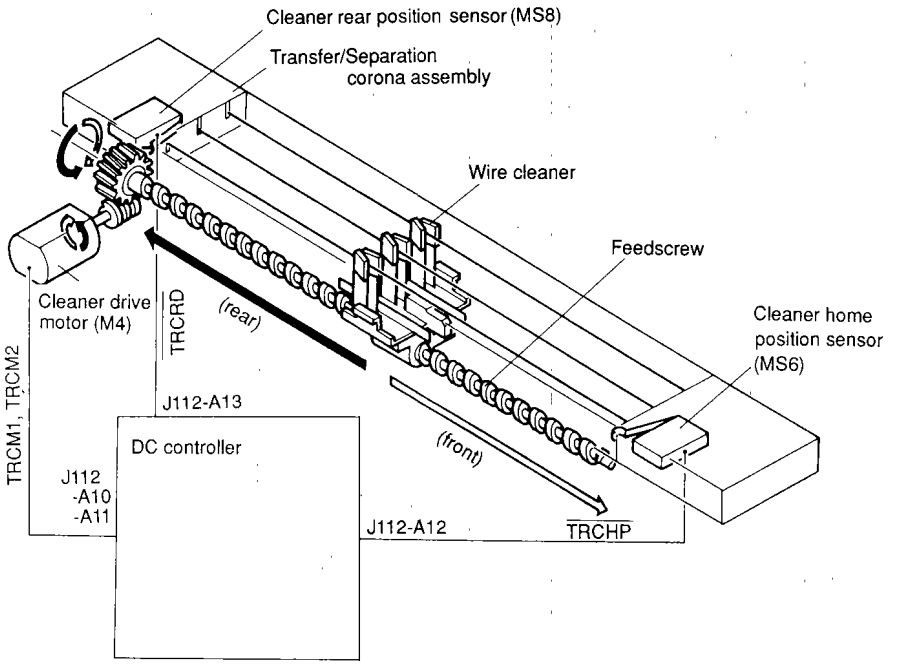

Figure 3-55 Automatic Cleaning Mechanism for Transfer/Sepasation Corona Assembly

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IV. PICK-UP / FEEDER SYSTEM

A. Outline

Figure 3-56 is a diagram that represents the pick-up/feeder system.

The set-back roller and delivery roller 2 are driven independently by stepping motors, and the rollers rotate in two directions.

The entire registration roller is designed to move across the drum (axial) by the work of the stepping motor (PM4) and is controlled so that the edge (horizontal) of the copy paper matches with the image for each copy run.

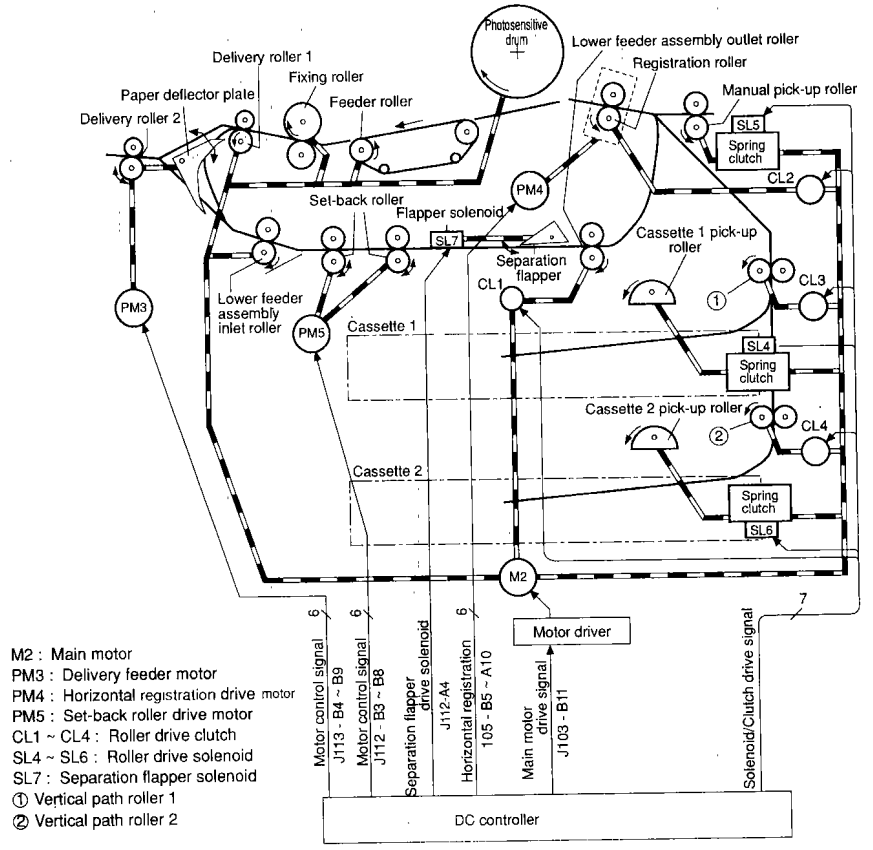

Figure 3-56

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The paper path has five photointerrupters that check the passage of copy paper.

The presence of paper inside the cassette is checked by photointerrupters (PS9, PS10).

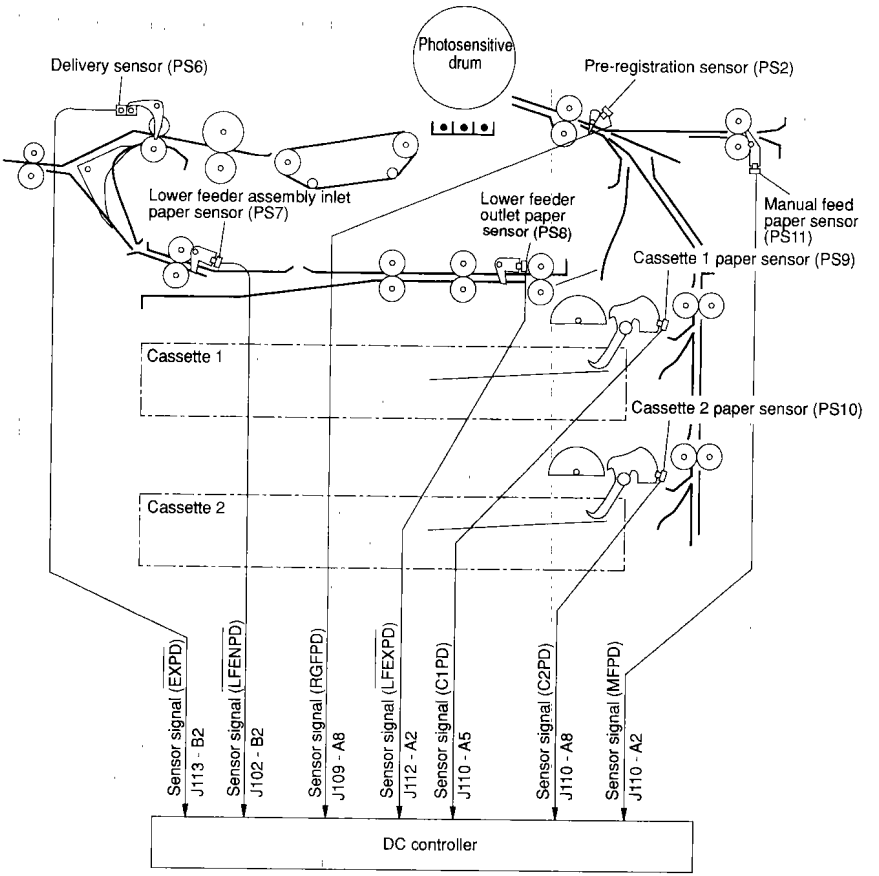
Photosensitive drum
Delivery sensor (PS6)
Pre-registration sensor (PS2)
Lower feeder assembly inlet paper sensor (PS7)
Lower feeder outlet paper sensor (PS8)
Manual feed paper sensor (PS11)
Cassette 1 paper sensor (PS9)
Cassette 1
Cassette 2 paper sensor (PS10)
Cassette 2
Sensor signal (EXPD) J113 - B2
Sensor signal (LFENPD) J102 - B2
Sensor signal (RGFPD) J109 - A8
Sensor signal (LFEXPD) J112 - A2
Sensor signal (C1PD) J110 - A5
Sensor signal (C2PD) J110 - A8
Sensor signal (MFPD) J110 - A2
DC controller

Figure 3-57

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B. Identifying the Cassette Size

The size of the cassette or the presence/absence thereof set in the cassette holders is checked by switches (CST1 through CST4).

As shown in Table 3-6, the microprocessor identifies the size of the cassette and the presence/absence thereof based on the combination of signals and, at the same time, decides when to reverse the scanner and how to control the blank exposure mechanism.

Arrangement / Cassett size	CST 1 (left)	CST 2	CST 3	CST 4 (right)
No cassette	0	0	0	0
B5 (182X257)	0	0	0	1
* U-L2 (203~220X317~354)	0	0	1	0
A4 (210X297)	0	0	1	1
B5R (257X182)	0	1	0	0
B4 (364X257)	0	1	0	1
A4R (297X210)	0	1	1	0
A3 (420X297)	0	1	1	1
* U-S1 (190~279X190~279)	1	0	0	0
* U-S2 (190~279X190~279)	1	0	0	1
* U-L1 (203~220X317~354)	1	0	1	0
Letter 8.5"X11" (216X279)	1	0	1	1
Mini 5.5"X8.5" (216X140)	1	1	0	0
Legal 18.5"X14" (356X216)	1	1	0	1
Letter R8.5"X11" (279X216)	1	1	1	0
Ledger 11"X17" (432X279)	1	1	1	1

0: SW isOFF.
1: SW is ON.

**Size may be stored if within the dimensions shown in the table.*

(unit: mm)

Table 3-6

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C. Pick-Up from Cassette

1. Outline

Paper may be picked up from cassette 1 or 2. Each of the rollers are rotated by drive transmitted by the clutch and the solenoid.

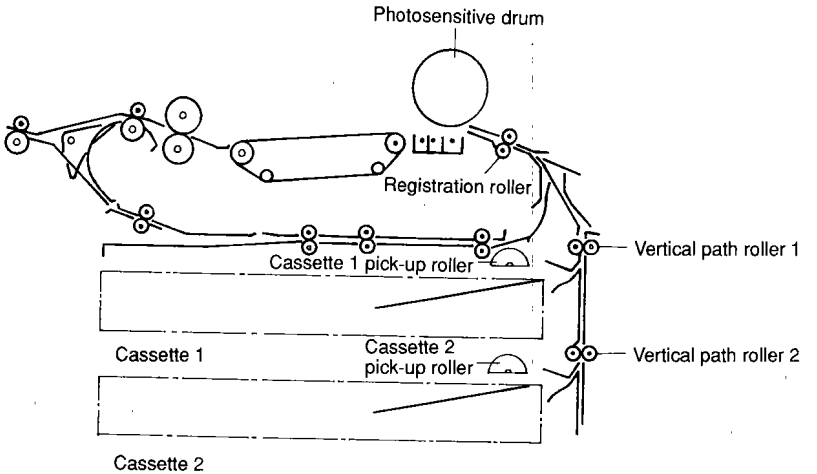

Figure 3-58

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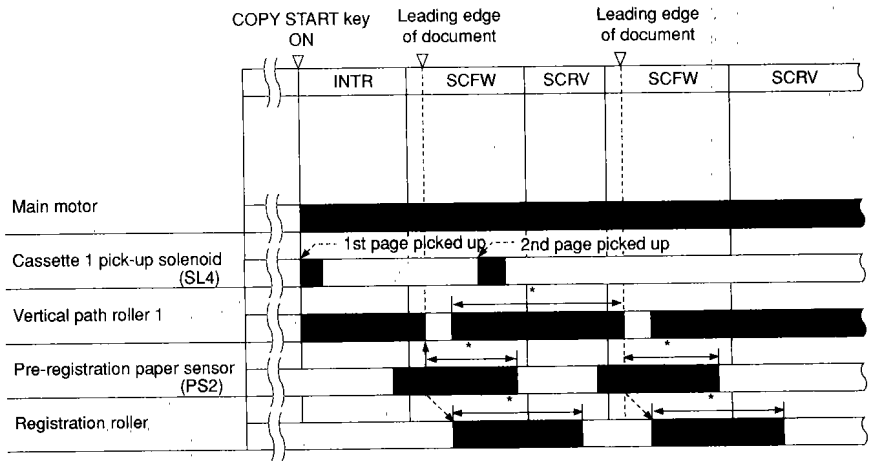
2. Pick-Up from Cassette 1 (2 copies)



* Varies depending on the size of paper.

Figure 3-59

3. Pick-Up from Cassette 2 (A4, 2 copies)

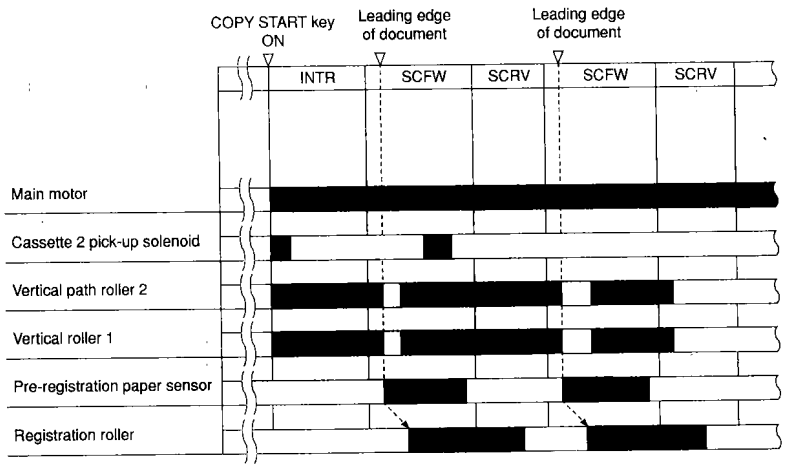


Figure 3-60

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D. Manual Feed

1. Pick-Up from Manual Feed Tray

The manual feed pick-up roller is driven by the main motor and rotates when the manual feed pick-up solenoid (SL5) is ON. The manual feed pick-up roller rotates as soon as the manual feed pick-up sensor (PS11) detects copy paper.

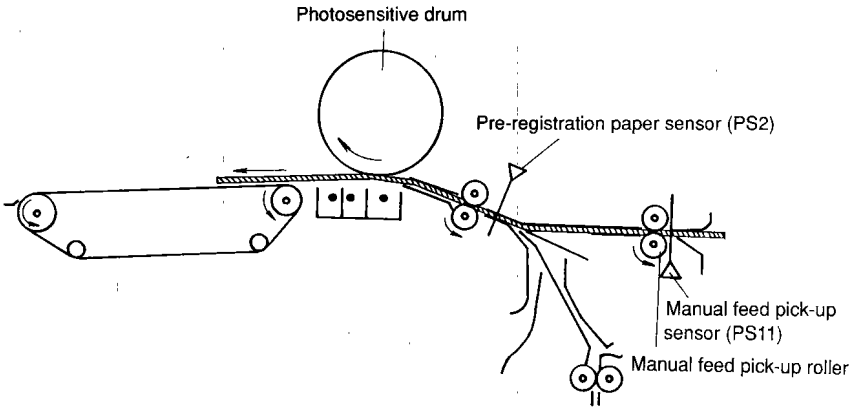

Figure 3-61

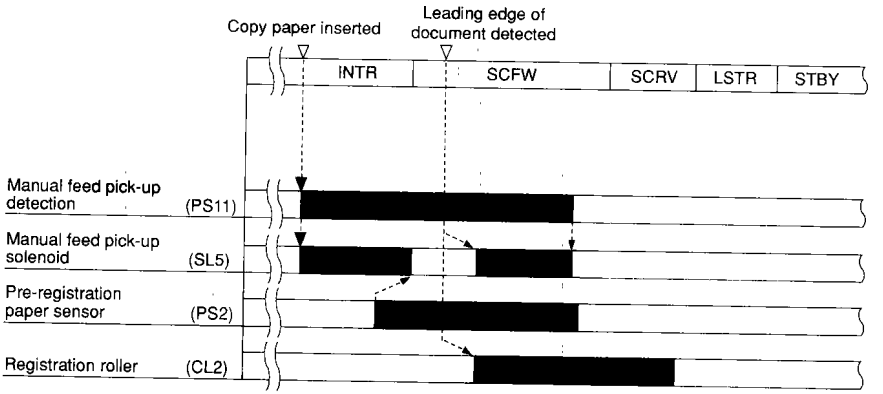

Figure 3-62

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E. Registration Roller

1. Outline

The copy paper picked up by the pick-up rollers is butted aganst the registration rollers to form an arch. This is to correct variations in pick-up roller timing and to minimize skew.

The registration rollers are moved (horizotal) to align the copy paper to the developed image on the drum.

In Figure 3-63, the drive of the horizontal registration motor (PM4) is transmitted to gear C through gears A and B; gear C is constructed as a single entity with gear B. The rotation of gear C is used to move the registration roller sideways; see Figure 3-63.

The edge of copy paper is detected by the horizontal registration paper edge sensor (PS1).

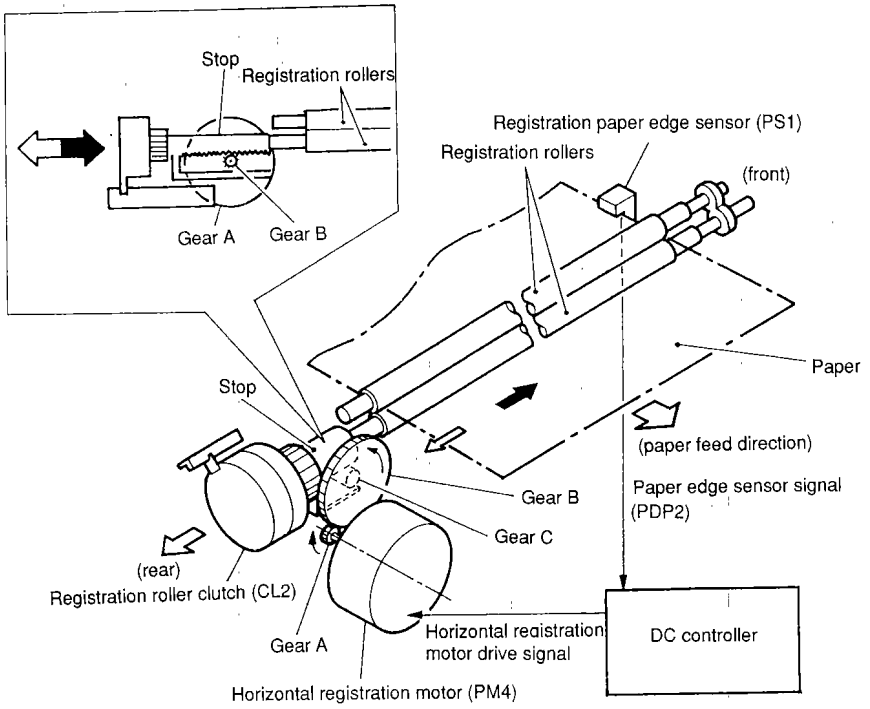

Figure 3-63

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2. Registration Mechanism

The registration roller operates in the following sequence:

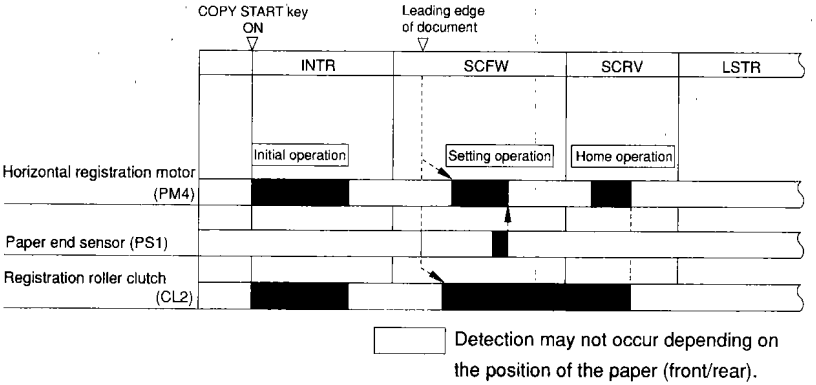
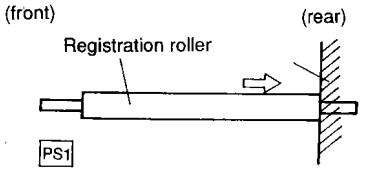


Figure 3-64

a. Initial Operation

The registration roller is moved to the rear, thereby butting the roller against the stop.



The roller is moved to the front 5.1 mm from the stop. This will be used as the home position.

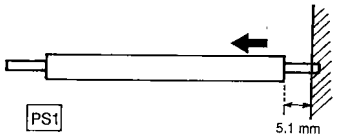


Figure 3-65

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b. Setting Operation

- If the sensor is ON, the registration roller is moved to the rear; the position at which the paper moves past the sensor will be used as the setting position.

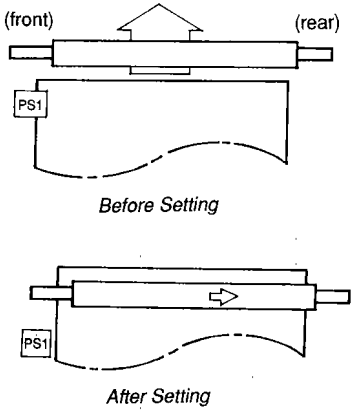

Figure 3-66

- If no paper is over the sensor, the registration roller is moved to the front and then, after the sensor has gone ON, it moves to the rear; the position at which the paper moves past the sensor will be used as the setting position.

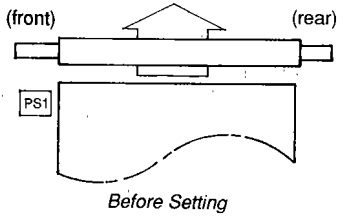

Figure 3-67

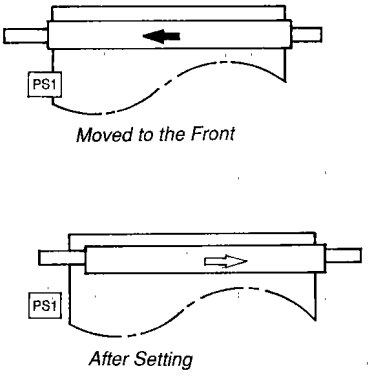

Figure 3-68

c. Home Operation

The registration roller is returned to the home position.

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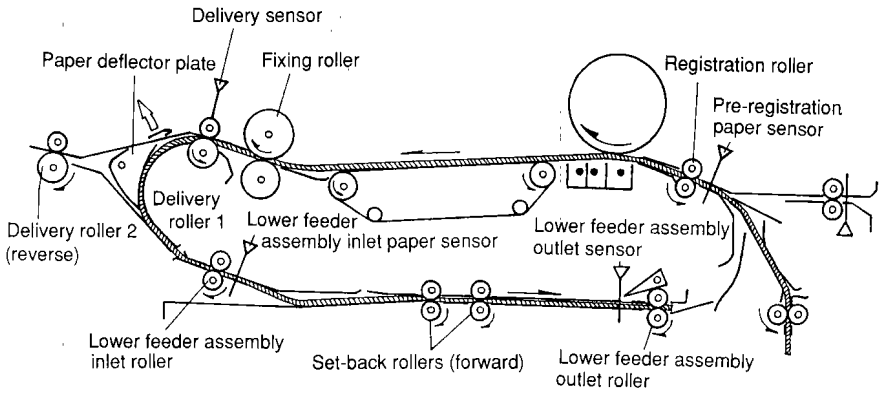
F. Making an Overlay Copy (NP3050 only)

1. Outline

Figure 3-69 shows the copy path. When copying on the first side, delivery roller 2 rotates in reverse to flip the paper deflector plate up.

The copy paper then moves and stops several millimeters past the lower feeder assembly outlet roller and waits for copying on its second side to begin. For the operation of the paper deflector plate, see p. 3-83.

Copying on 1st Side



Copying on 2nd Side

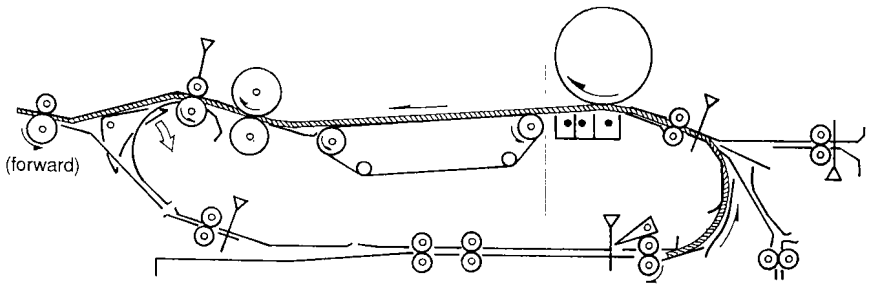


Figure 3-69

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2. Sequence of Operation (1 copy; overlay)

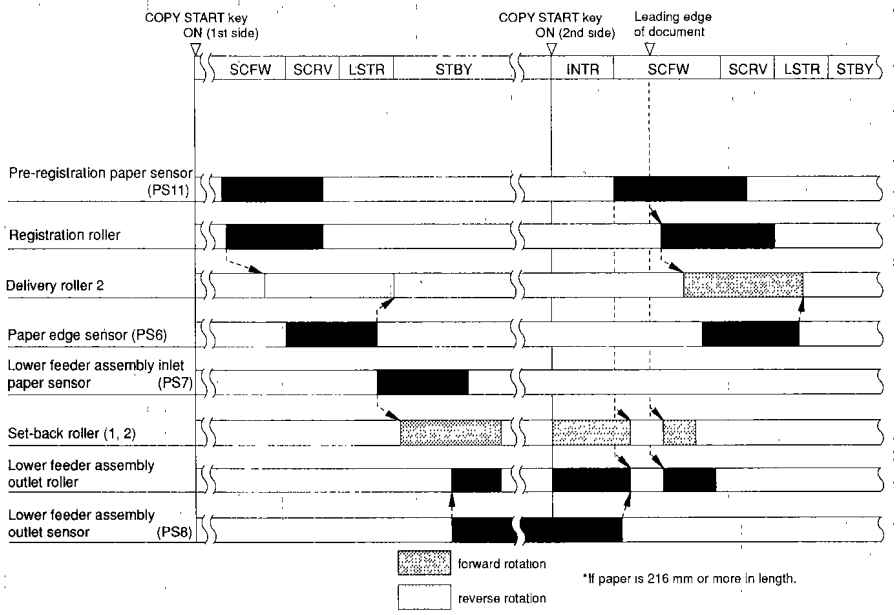

Figure 3-70

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G. Making a Two-Sided Copy (NP3050 only)

1. Outline

Figure 3-71 shows the paper path used when making two-sided copies. When copying on the first side, the No. 2 delivery roller rotates in reverse 0.3 seconds after the trailing edge of the copy paper has moved past the delivery sensor to orient the paper deflector plate up, thereby switching back and forwarding the copy paper to the lower feeder assembly.

The copy paper then moves ahead and stops after it has moved several millimeters past the lower feeder outlet roller to wait for copying on the second side.

Copying on 1st Side

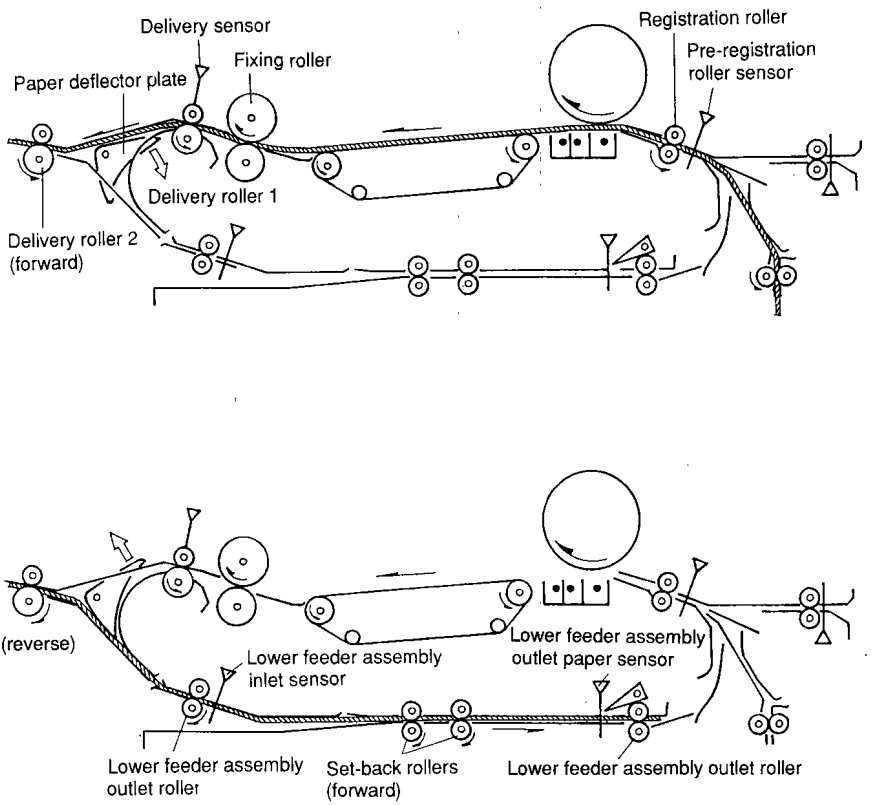

Figure 3-71

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Copying on 2nd Side

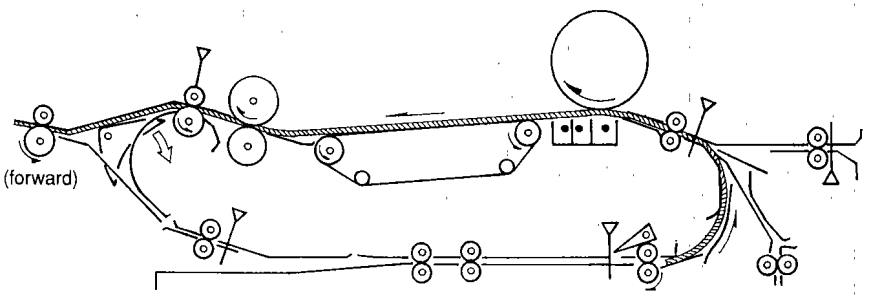

Figure 3-72

2. Sequence of Operations (1 copy; two-sided)

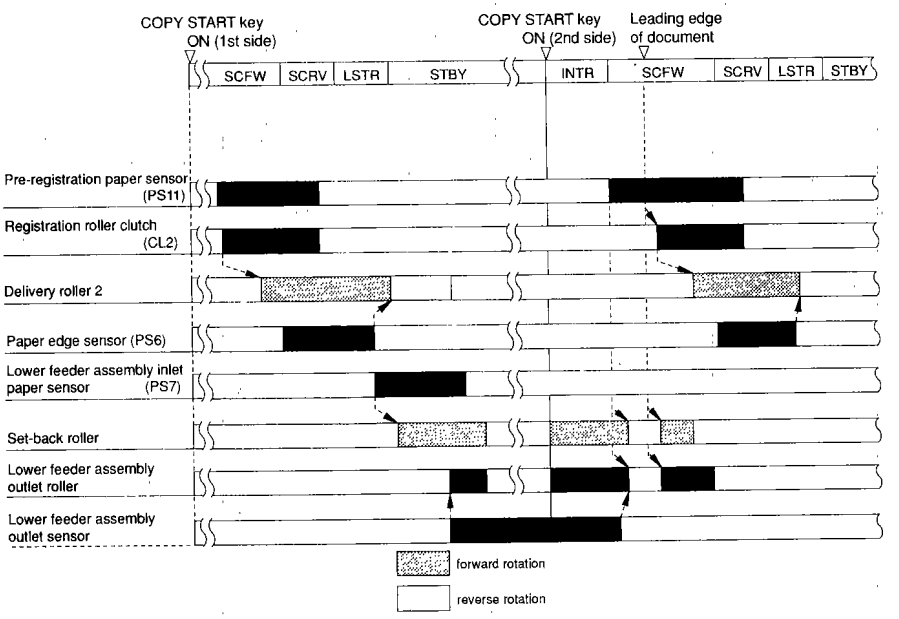

Figure 3-73

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H. Lower Feeder Assembly (NP3050 only)

1. Outlet

The machine performs two-sided and overlay continuous copying using its set-back mechanism and separation flapper.

The set-back mechanism is a mechanism in which sheets of copy paper are stacked up in the form of tiles in the lower feeder assembly, thereby eliminating double feeding within a limited space. The separation flapper in the outlet of the lower feeder assembly helps increase the size of the stack and, at the same time, prevents transfer of toner from one copy to another when sheets are picked up for a second time.

The set-back mechanism is used under the following conditions:

1. Size of Copy Paper
   A4, B5, LTR
2. Number of Copies:
   2 to 20

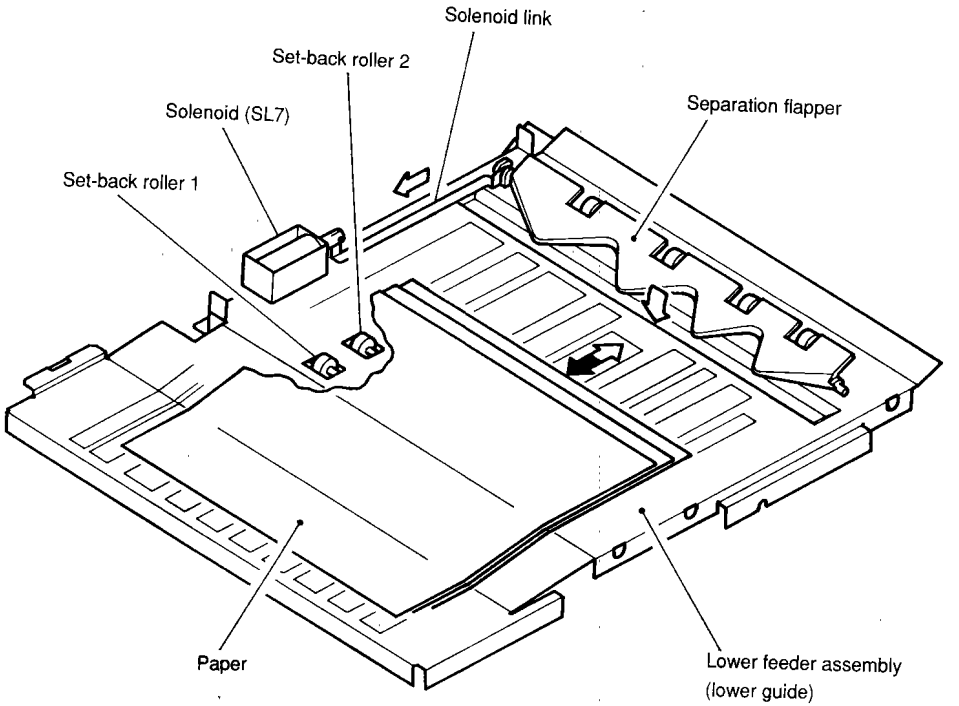

Figure 3-74

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2. Set-Back Mechanism (copying on 1st side)

The lower feeder assembly inlet roller and the lower feeder assembly outlet roller are driven by the main motor; the set-back roller, on the other hand, is driven by a special stepping motor (PM5).

The separation flapper is driven by a solenoid (SL7).

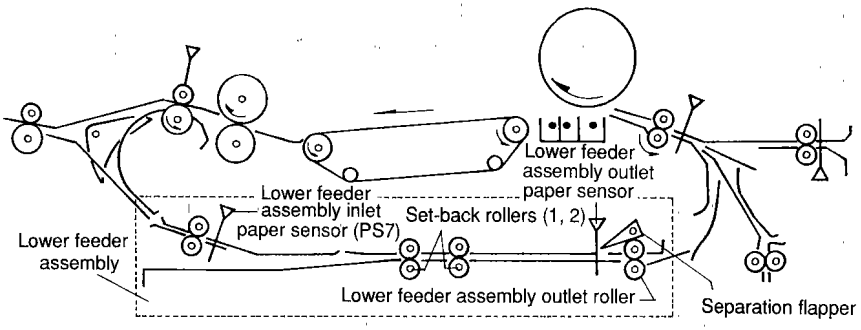
Lower feeder assembly outlet paper sensor
Lower feeder assembly inlet paper sensor (PS7)
Set-back rollers (1, 2)
Lower feeder assembly
Lower feeder assembly outlet roller
Separation flapper

Figure 3-75

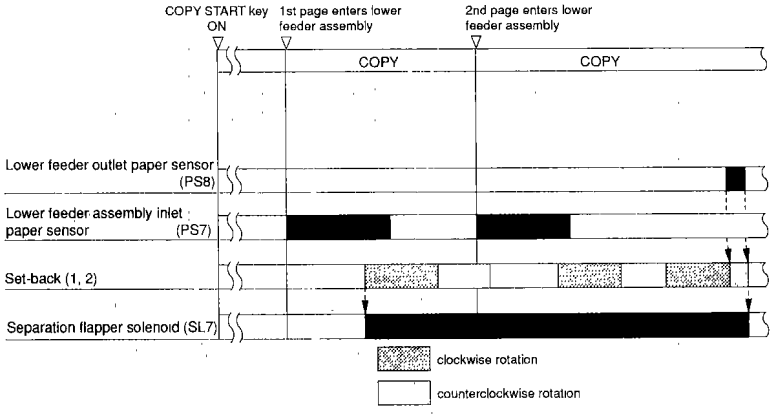

Figure 3-76

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a. Set-Back Mechanism

1) The 1st page is fed from the delivery assembly to the lower feeder assembly.

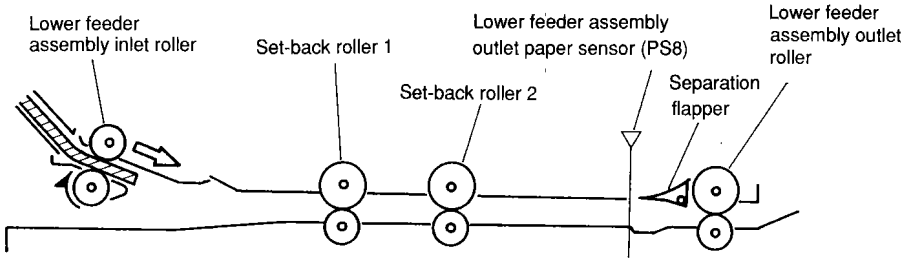
Lower feeder assembly inlet roller
Set-back roller 1
Lower feeder assembly outlet paper sensor (PS8)
Lower feeder assembly outlet roller
Set-back roller 2
Separation flapper

Figure 3-77

2) The leading edge of the paper butts against set-back roller 1 and forms an arc.

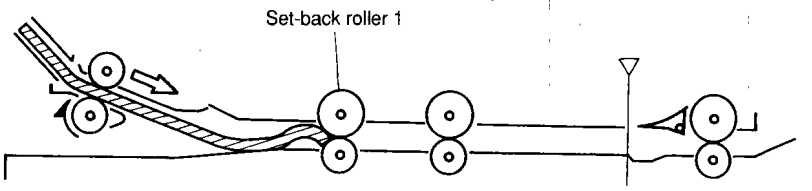

Figure 3-78

3) The separation flapper lowers and, at the same time, set-back rollers 1 and 2 rotate forward, moving the paper to the lower feeder assembly outlet and pulling out the paper from the lower feeder assembly inlet.

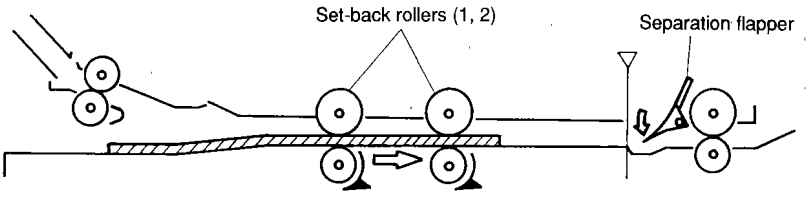

Figure 3-79

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4) Set-back rollers 1 and 2 rotate in reverse, causing the leading edge of the paper to stop 8 mm past the outlet to the set-back roller.

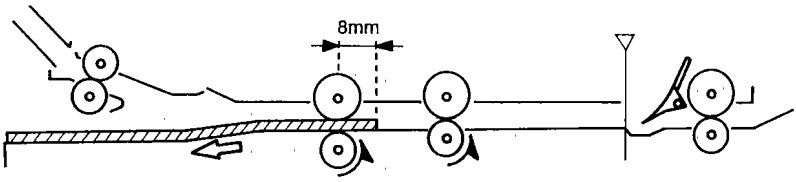

Figure 3-80

5) The 2nd page is fed to the lower feeder assembly.

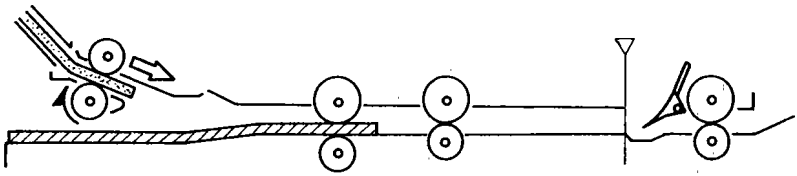

Figure 3-81

6) The 2nd page butts against set-back roller 1, causing the leading edge of the paper to form an arc.

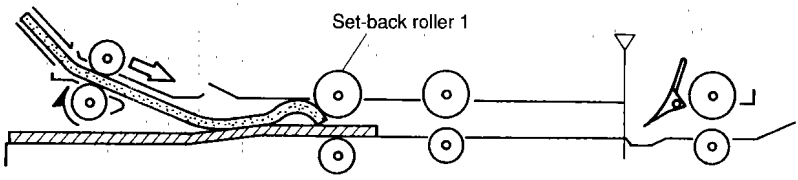

Figure 3-82

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7) Set-back rollers 1 and 2 rotate forward, thereby pulling the trailing edge of the 2nd page from the lower feeder assembly inlet.

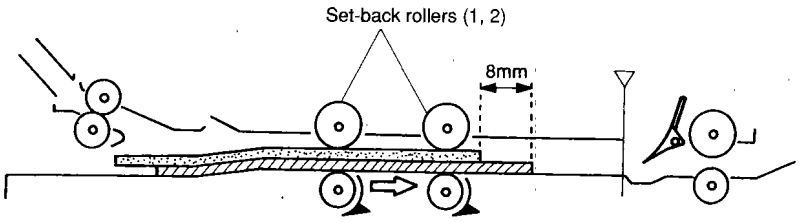

Figure 3-83

8) Set-back rollers 1 and 2 rotate in reverse; the leading edge of the 2nd page stops 8 mm past the outlet from the set-back roller to the outlet.

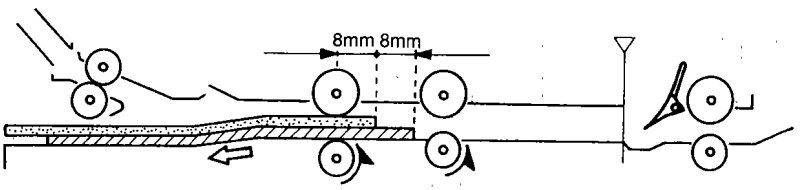

Figure 3-84

9) Operations from 5 to 8 are repeated for the specified copy count, and sheets are stacked in the lower feeder assembly.
10) When the specified number of sheets have been stacked, set-back rollers 1 and 2 rotate forward; rollers 1 and 2 stop after the leading edge of the 1st page reaches the lower feeder assembly outlet sensor.

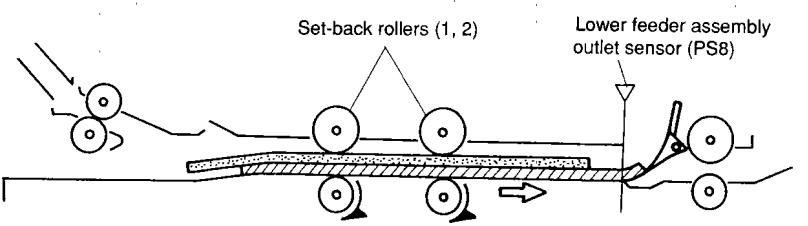

Figure 3-85

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11) Set-back rollers 1 and 2 rotate in reverse, causing the leading edge of the 1st page to stop in front of the lower feeder assembly outlet sensor and, at the same time, raising the separation flapper.

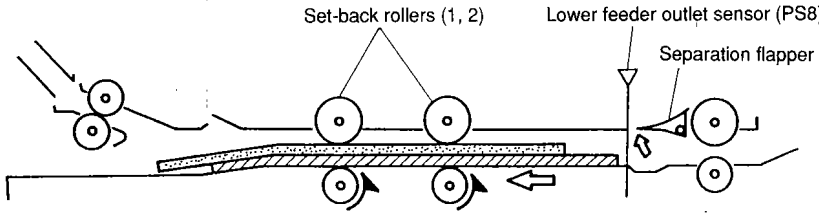

Figure 3-86

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3. Re-Feeding

After copying on the 1st side, the sheets stacked up in the lower feeder assembly will be fed for copying on the 2nd side.

The machine is equipped with a flapper at the lower feeder assembly outlet to improve separation of stacked sheets.

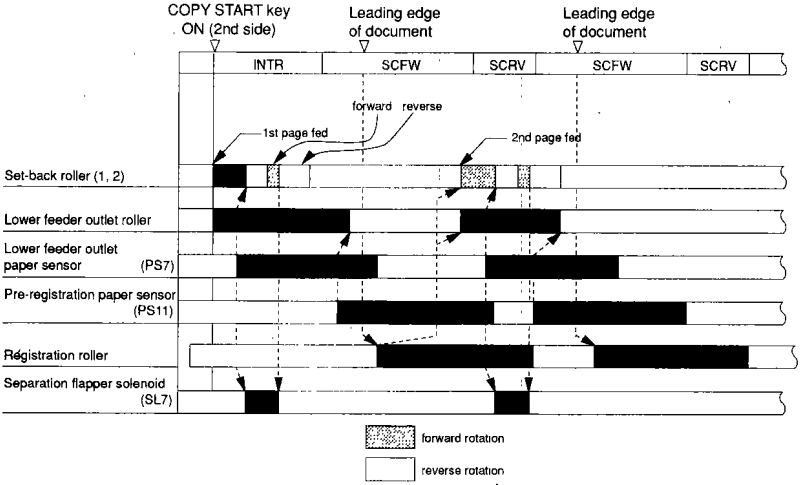

Figure 3-87

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1) When the COPY START key is pressed for the 2nd side, the set-back rollers and the lower feeder outlet roller start to rotate.

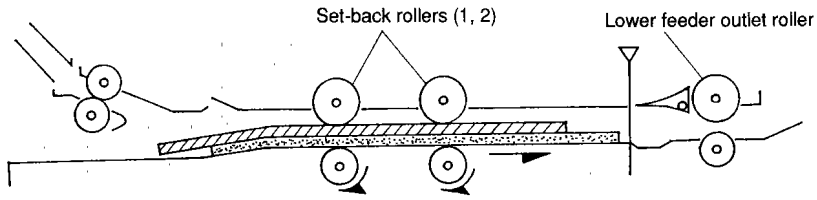

Figure 3-88

2) After a lapse of a specific time following the arrival of the leading edge of the 1st page at the lower feeder outlet paper sensor, the set-back rollers and the lower feeder assembly outlet roller stop and the separation flapper lowers.

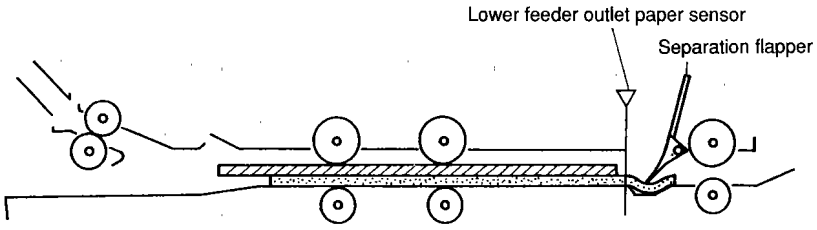

Figure 3-89

3) The set-back rollers and the lower feeder outlet roller rotate forward once again, and the 1st page and the 2nd page are separated by the separation flapper.

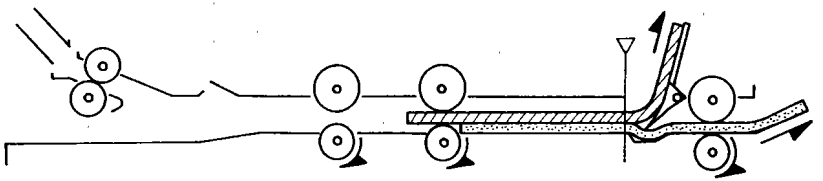

Figure 3-90

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4) When the trailing edge of the 1st page moves past the set-back rollers, the set-back rollers rotate in reverse to move back the 2nd page; at that time, the separation flapper moves up.

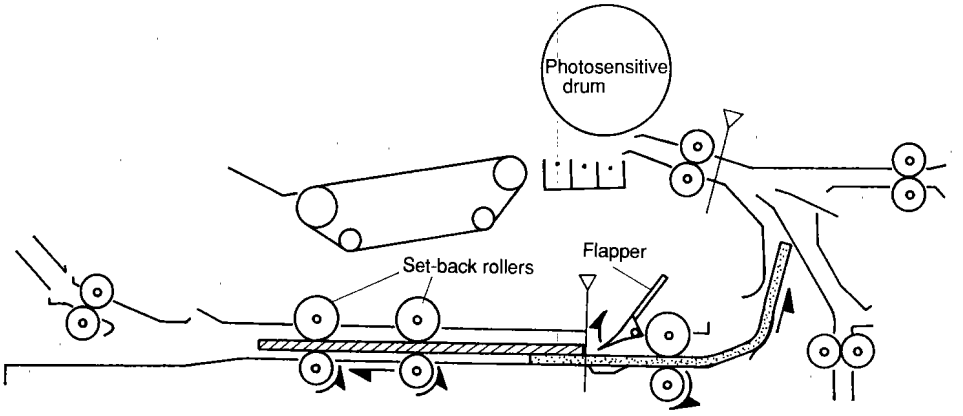

Figure 3-91

5) After the pre-registration paper sensor has gone ON, the set-back rollers and the lower feeder outlet roller rotate forward to feed the second sheet.

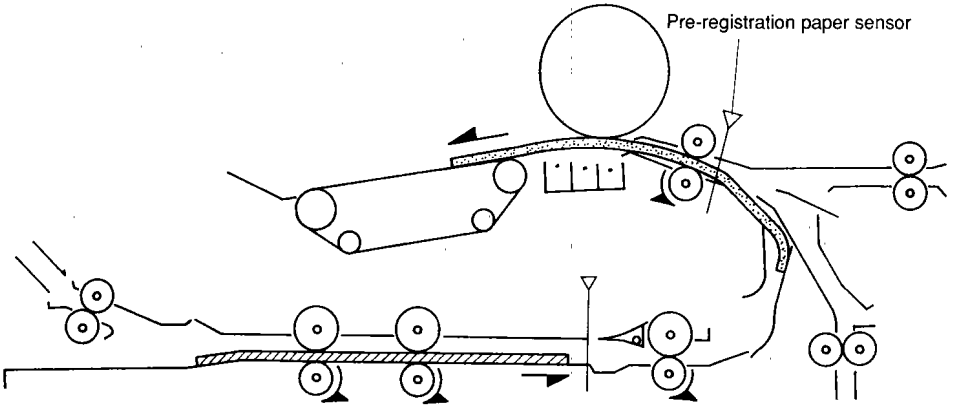

Figure 3-92

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I. FIXING ASSEMBLY

1. Controlling the Temperature of the Fixing Roller

The upper roller, lower roller, and delivery roller 1 are driven by the main motor (M2).

The upper roller is heated by the fixing heater (H1), and the temperature of its surface is monitored by a thermistor (TH1).

Fixing assembly surface temperature is 'high'.

Thermistor (TH1) resistance is 'low'

Fixing roller surface temperature-sensor signal (FRST) voltage is 'low'.

Based on the voltage of FRST, the microprocessor on the DC controller controls the state of the fixing heater drive signal (HTRD; '1' or '0') so that the surface of the upper roller will remain at a specific temperature.

during copying operation: controlled to 180°C
during preheat: controlled to 180°C

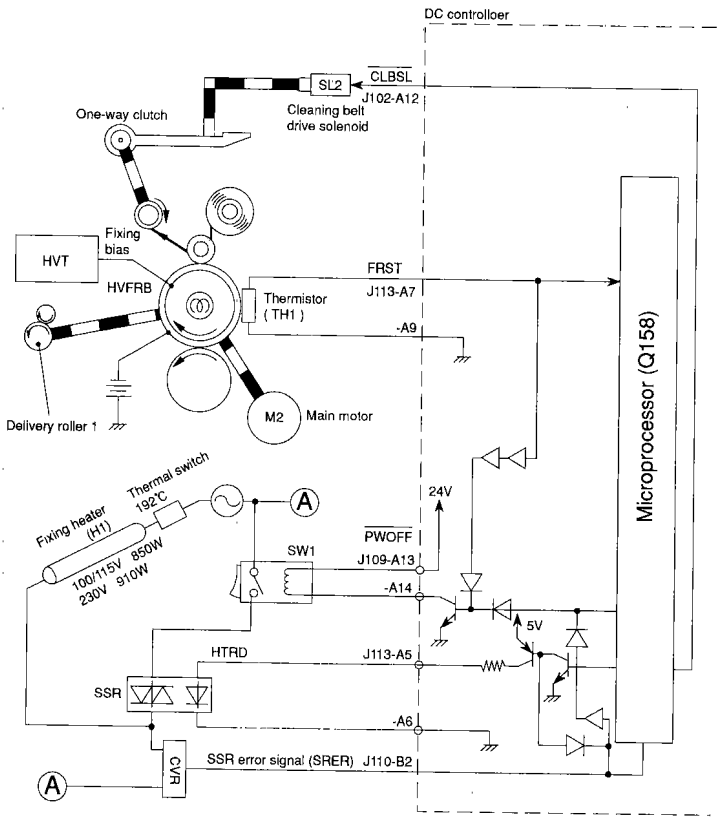

Figure 3-93

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2. Error Detection

The machine is equipped with the following four protective mechanisms to prevent malfunctions of the fixing assembly.

A. The CPU monitors the output of the thermistor; and, if an error is detected in the control mechanism for the fixing roller, it indicates 'E000', 'E001', 'E002', 'E003', or 'E004' and, at the same time, causes the main switch to go OFF by a relay.

A-① The fixing assembly monitor circuit monitors the output of the thermistor and, if the temperature remains 230°C for three seconds or more, turns the main switch OFF.

A-② The fixing assembly monitor circuit monitors SRER* and, if SRER is present for 3 seconds or more when HTRU is '0', turns the main switch OFF.

*'1' when the secondary side of SSR is ON.

A-③ The thermal switch will be activated when the inside temperature of the fixing roller exceeds 192°C to cut the supply power to the fixing heater.

Note:

Once activated, the contact of the thermal switch will not recover unless the switch is cooled to 0°C or less; it will not recover at ambient temperature.

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3. Driving the Cleaning Belt

The cleaning belt drive signal (CLBSL) generated by the DC controller causes the cleaning belt drive solenoid (SL2) to go ON to clean the upper fixing roller. The cleaning belt is driven with the following conditions:

a. The feed length for each cleaning session is about 0.1 mm.
b. If A4, A5, or LTR, one cleaning session for each two sheets of paper picked up.
If A3 or LGL and in the manual mode, one cleaning session for each sheet of paper picked up.
c. The DC controller keeps count of the number of times that the cleaning belt has been driven and, at the 100,000th session, indicates the 'BELT SHORT' message on the control panel. Replace the belt as soon as possible; the count may be checked in the service mode.

4. Fixing Bias

The machine applies a bias of about 700 V (+) on the upper fixing roller to prevent adhesion of positively charged toner to the upper roller, thereby eliminating toner offset to the paper; the power comes from the high-voltage power supply.

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4. Sequence of Operations Related to Fixing Assembly

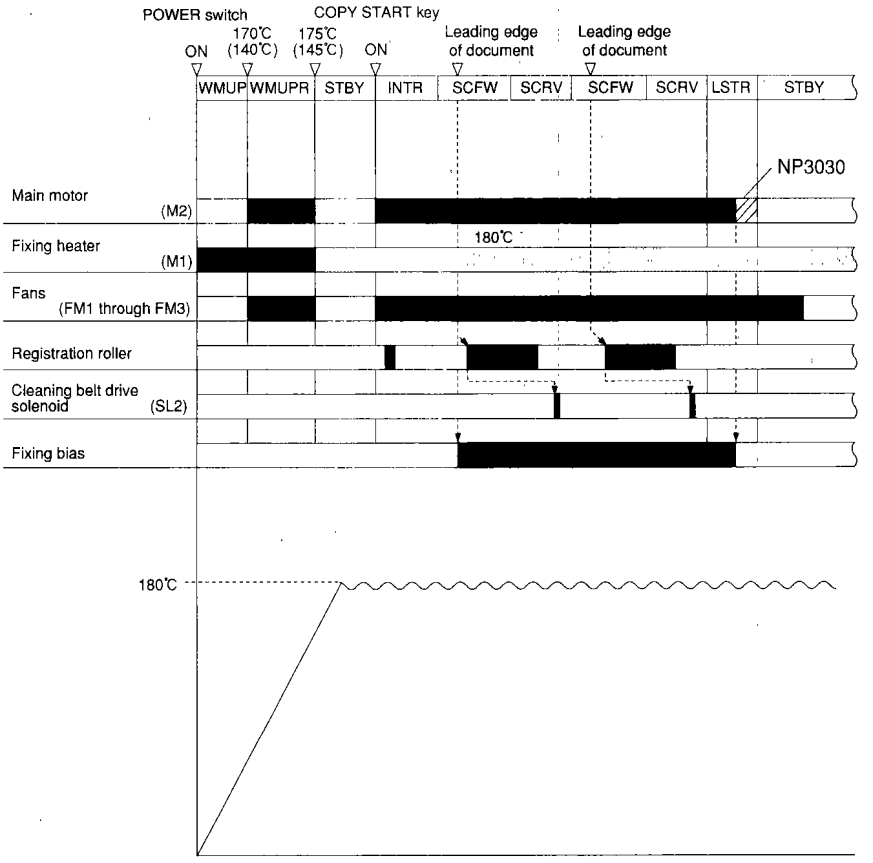

Figure 3-94

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J. Delivery Assembly

1. Outline

Figure 3-95 shows the construction of the delivery assembly. The paper deflector plate of NP3050 operates as shown in Figure 3-96 by the work of delivery roller 2.

The drive of delivery roller 2 (NP3050) comes from the stepping motor (PM3).
The drive of delivery roller 2 (NP3030) comes from main motor (M2).

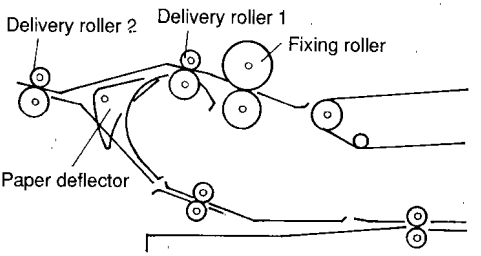


Figure 3-95a NP3050

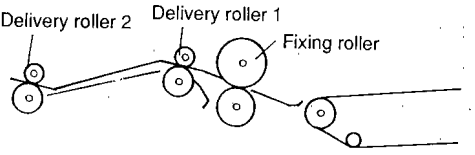
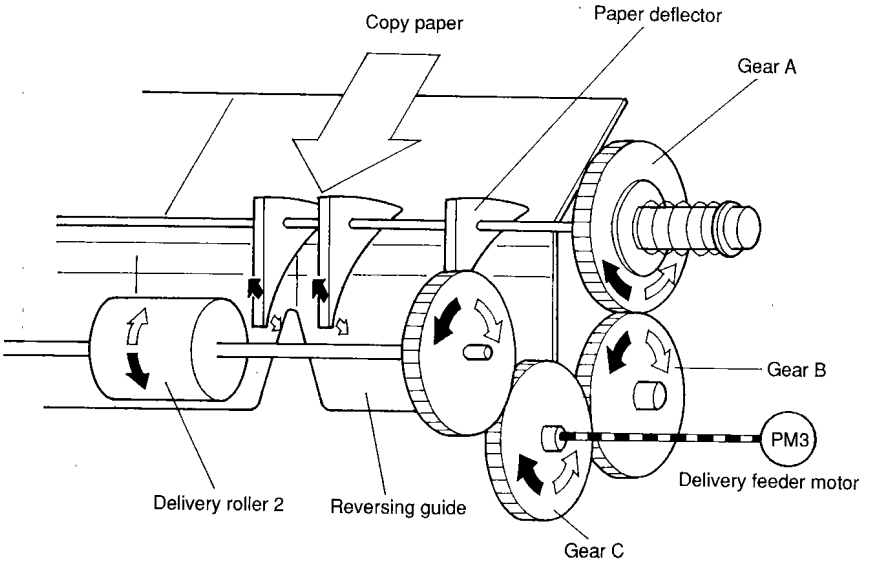


Figure 3-95b NP3030



: rotation at time of delivery
: rotation at time of forwarding paper to lower feeder assembly

Figure 3-96

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2. Delivery

The delivery operation takes place as shown in Figure 3-97.

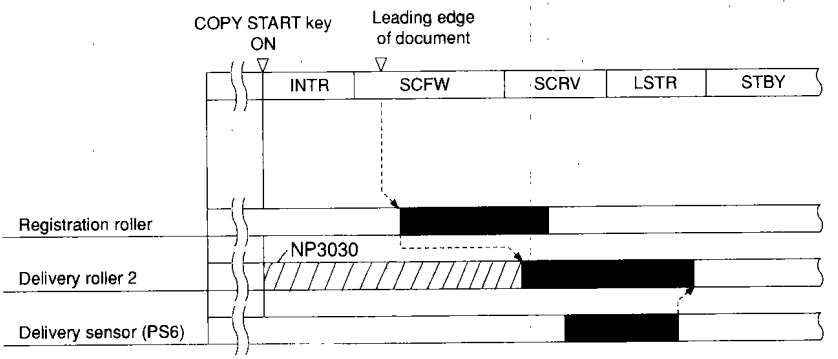

Figure 3-97

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K. Checking for Jams

The machine is equipped with the following paper sensors to check the presence/absence of paper and for jams.

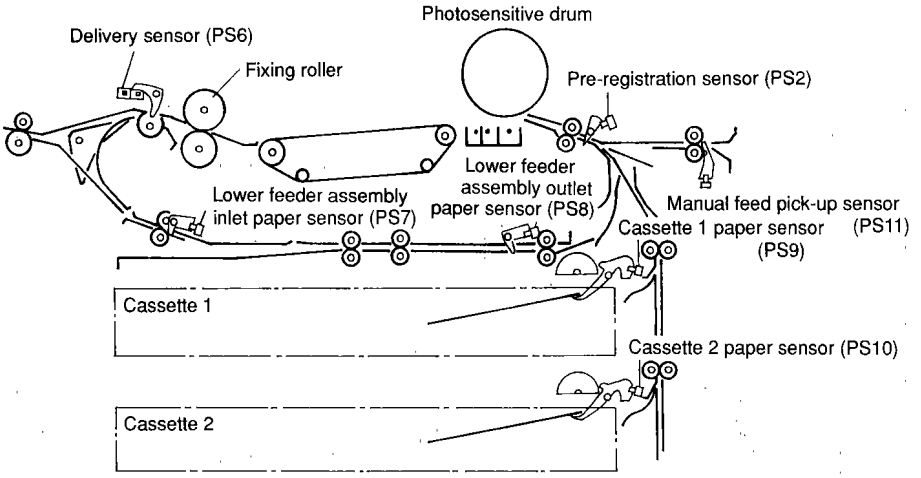

Figure 3-98

The presence/absence of paper and jams are checked in terms of the presence/absence of paper over sensors at intervals of time pre-programmed in the microprocessor.

The machine stores the remaining number of copies to be made as well as the and copy mode so that the copy count or the copy mode need not be reset after removing jams by opening the machine's front door.

The master CPU identifies a jam under the following conditions and, in addition, when any of the sensors detects paper at time of power-on. Jams are also identified when the upper right or lower door, delivery door, or manual feed tray cover is opened during copying operation.

When a jam occurs, the main motor stops as well as AC loads.

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1. Stationary Jam at Power-On

A stationary jam is identified if paper is present at the sensor at time of power-on or warm-up (except PS9, PS10).

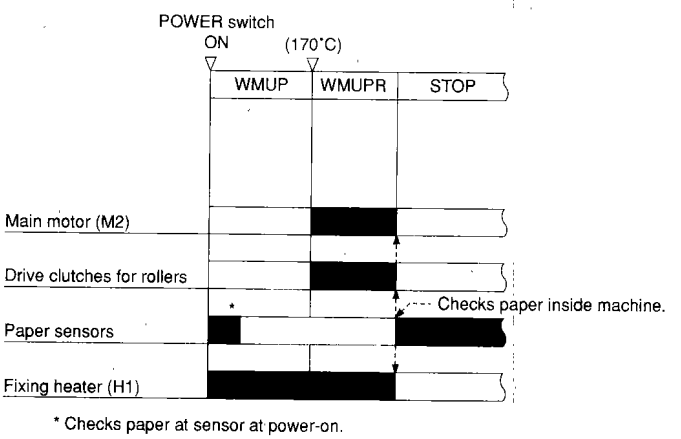

Figure 3-99

2. Delay Jam by Pre-Registration Paper Sensor

The paper does not reach the pre-registration paper sensor (PS2) within a specific period of time after the manual pick-up roller has gone ON.

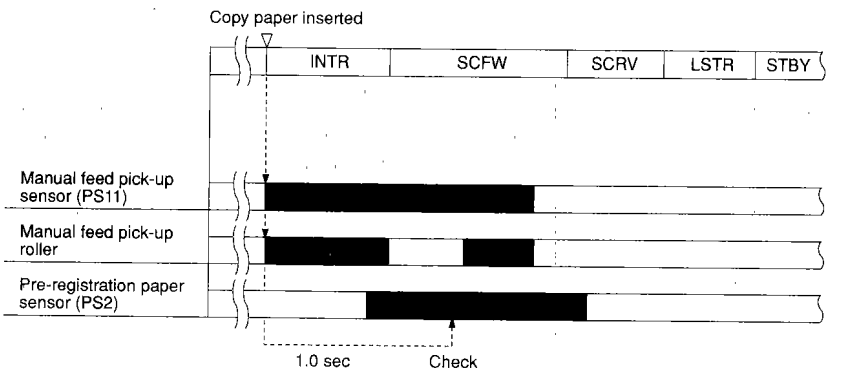

Figure 3-100

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b. Pick-Up from Cassette 1

The paper does not reach the pre-registration sensor (PS2) within a specific period of time after the COPY START key is pressed.

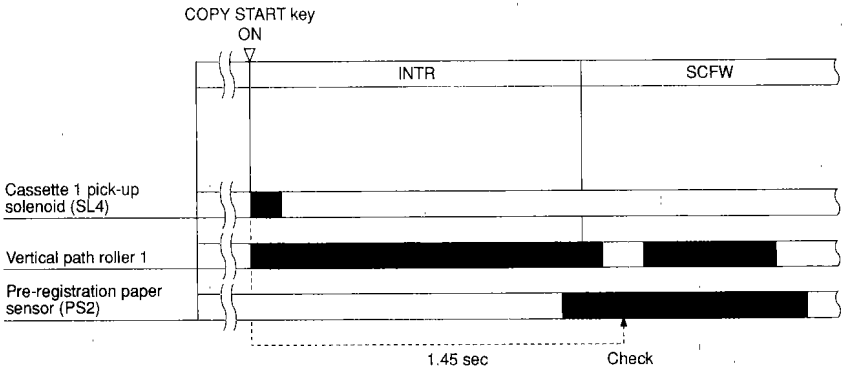

Figure 3-101

c. Pick-Up from Cassette 2

The paper does not reach the pre-registration paper sensor (PS2) within a specific period of time after the COPY START key is pressed.

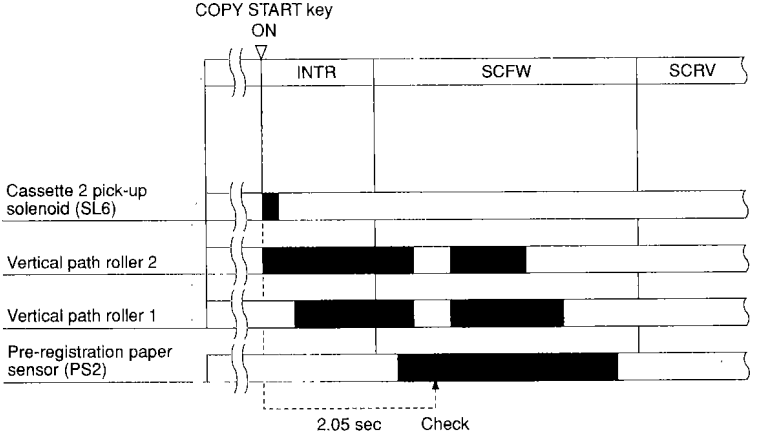

Figure 3-102

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d. Re-pick up from Lower Feeder Assembly (NP3050 only)
The paper does not reach the pre-registration paper sensor (PS2) within a specific period of time after the lower feeder assembly outlet paper sensor has gone ON.

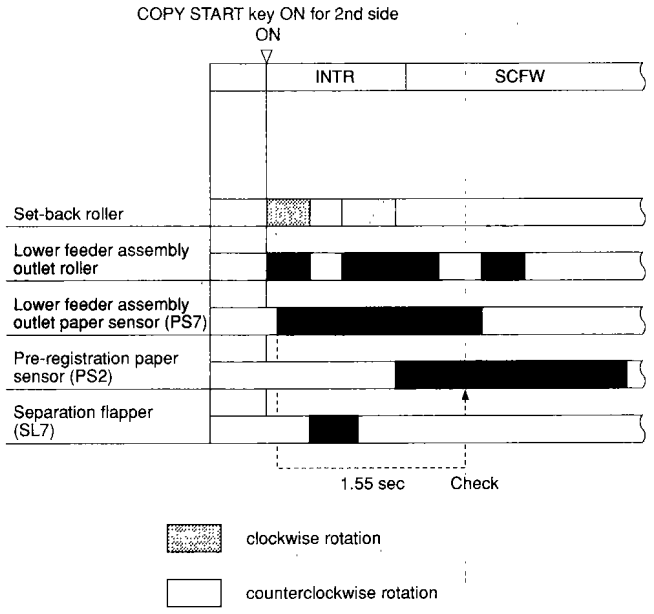

Figure 3-103

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3. Delay Jam by Delivery Sensor

The paper does not reach the delivery sensor (PS6) within a specific period of time after the registration roller has gone ON.

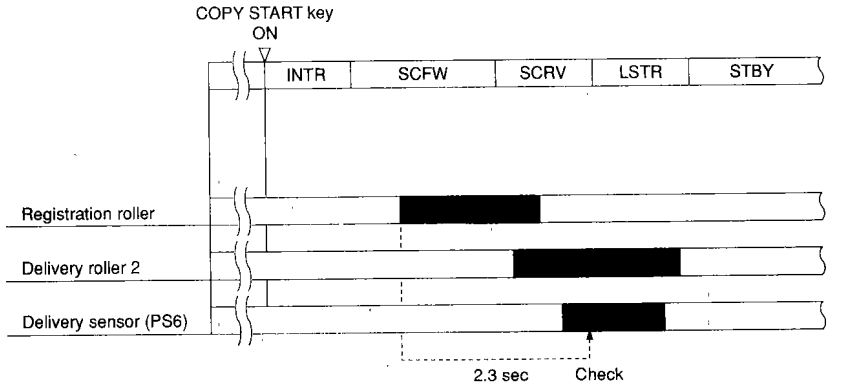
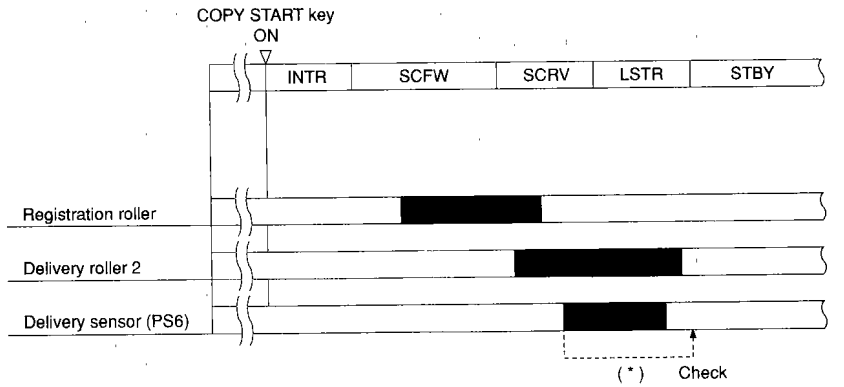


Figure 3-104

4. Stationary Jam by Delivery Sensor

The paper does not move past the delivery sensor (PS6) within a specific period of time after the delivery sensor has detected the paper.



*Varies depending on the paper size.

Figure 3-105

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5. Delay Jam by the Lower Feeder Assembly Inlet Paper Sensor (NP3050 only)

a. Two-Sided Copy

The paper does not reach the lower feeder inlet paper sensor (PS7) within a specific period of time after the delivery roller has started to rotate in reverse.

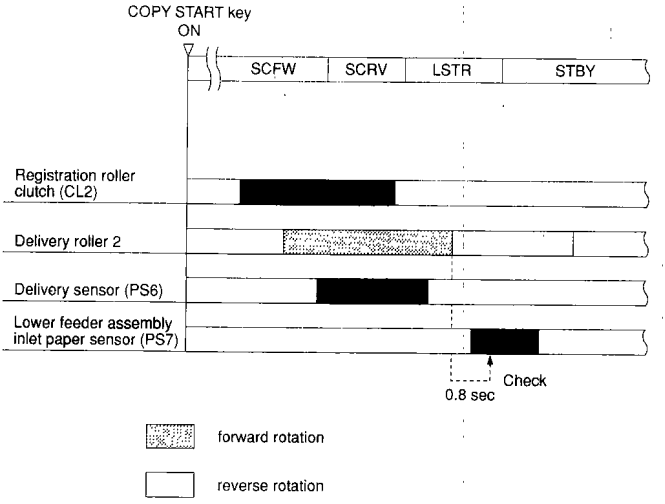

Figure 3-106

b. Overlay Copy

The paper does not reach the lower feeder inlet paper sensor (PS7) within a specific period of time after the delivery sensor (PS6) has detected the leading edge of the copy paper.

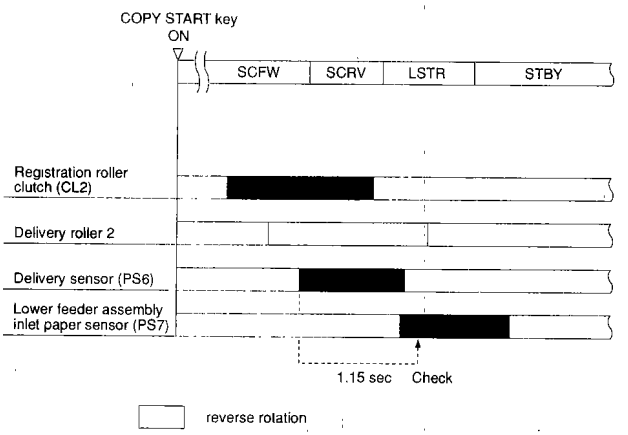

Figure 3-107

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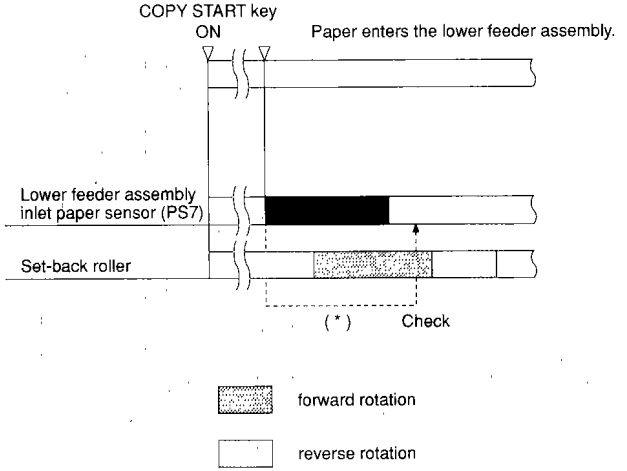
6. Stationary Jam by Lower Feeder Assembly Inlet Paper Sensor (NP3050 only)

The paper does not move past the lower feeder assembly inlet paper sensor (PS7) after the lower feeder assembly inlet paper sensor (PS7) has detected the leading edge of the paper.



*Varies depending on the paper size.

Figure 3-108

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V. POWER SUPPLY

A. Outline of Power Distribution

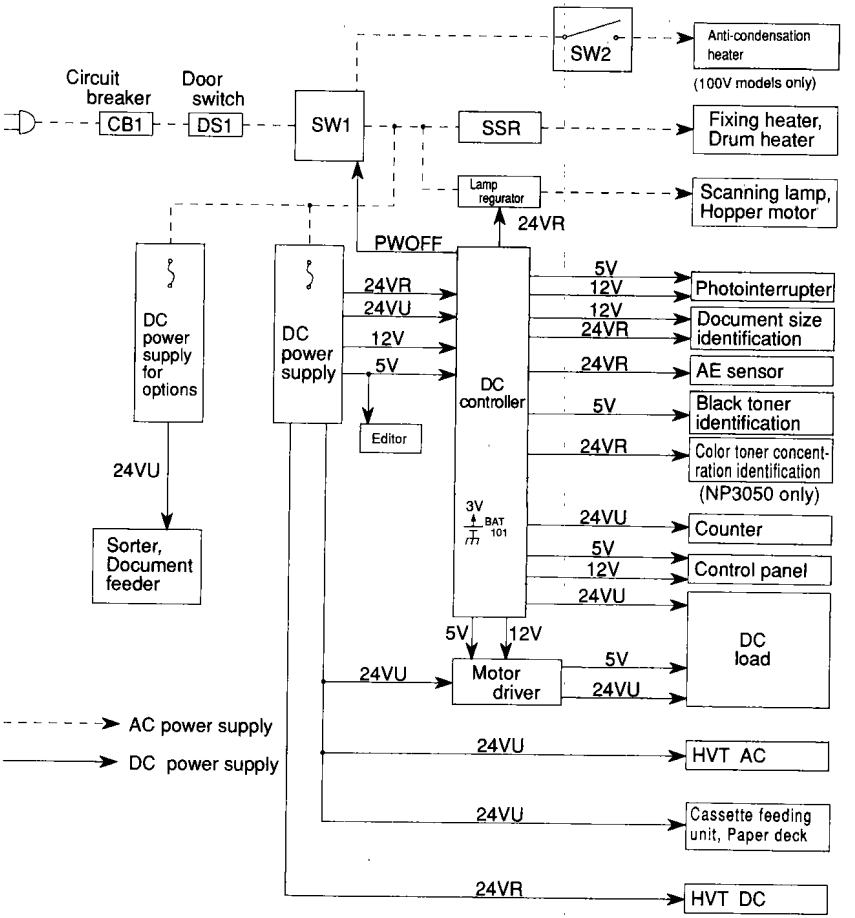

Figure 3-109

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The AC power supply provides the DC power supply with power when the door switch and the power switch are turned ON. The DC power supply generates 24VR, 24VU, 12V, and 5V.

The DC power to the DC controller is cut off when the door switch or the power switch is turned OFF; for this reason, the machine is equipped with a lithium battery (BAT101) to back up the SRAM (Q150) on the DC controller.

The DC power supply for options provide the document feeder and sorter, if attached, with 24V power.

The anti-condensation heater is supplied with power when the power switch is turned OFF; the heater can be switched OFF by turning SW2 OFF.

B. Protection Mechanism for Power Supply Circuit

If the DC power supply is equipped with a protection mechanism so that if it suffers a short circuit for some reason, its power output will be cut off.

To reset the output, open the front door, keep the door switch OFF, disconnect the power plug, and correct the problem; after ten minutes, reconnect power and set the door switch ON once again.

Keep in mind, however, that repeated short-circuiting and resetting can cause the built-in fuse to melt.

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VI. EDITOR (Image Editing Unit; NP3050 only)

A. Outline

1. Electrical Circuit

The editor is controlled by the editor controller PCB. The editor controller PCB is a microprocessor and, according to preprogrammed instructions, it reads points pressed by a cordless pen using a plane-shaped resistor to send signals to the copier as necessary.

2. Communication with the Copier

The editor communicates with the copier in serial as shown in Figure 3-110. The editor is supplied with power by the RDF, and the editor controller PCB converts 5 VDC to 3.5 VDC.

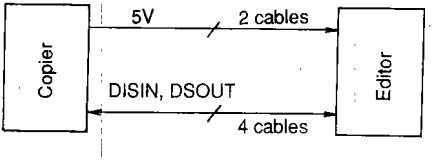

Figure 3-110

3. Inputs to and Outputs from the Editor Controller PCB

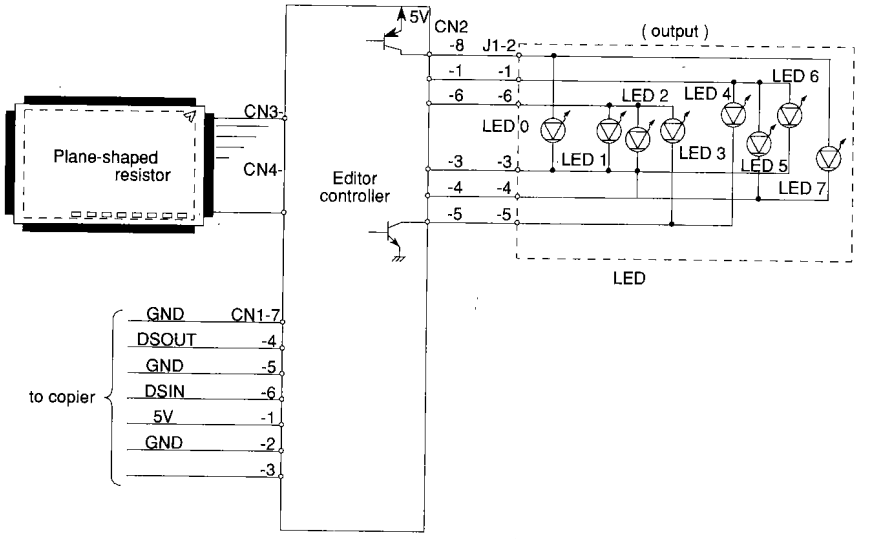

Figure 3-111

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4. Basic Construction of Editor

The editor consists of a tablet and a cordless pen.

Figure 3-112 shows the basic construction of the tablet. As shown in Figure 3-112, the table consists of several layers, i.e, from above, a protection sheet, X plane-shaped resistor, Y plane-shaped resistor, and fixed plate.

The Y plane-shaped resistor is equipped with bosses called dot spacers. These dot spacers are arranged over the Y plane-shaped resistor and serve to prevent contact between the X plane-shaped resistor and the Y plane-shaped resistor when the table is free of pressure.

The editor controller reads points pressed by the cordless pen and the settings as if they are settings or function key information.

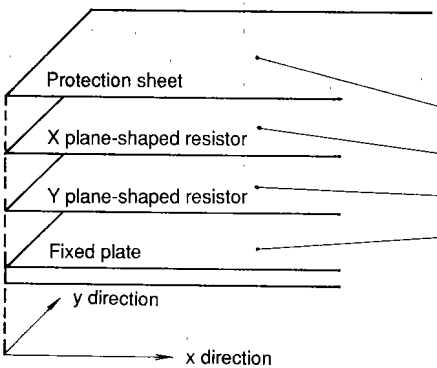

Figure 3-112

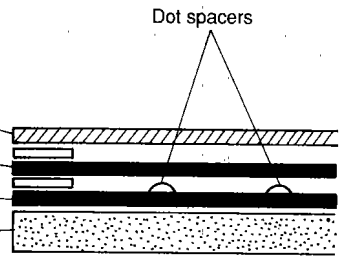

Figure 3-113

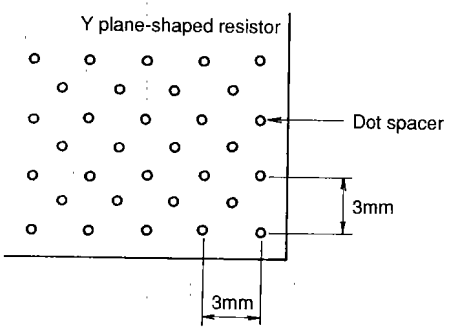

Figure 3-114

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B. Electrical Circuitry

1. Reading Input Operations

The editor identifies presses with the cordless pen as explained below.

Figure 3-115 shows the equalizer circuit of the comparator unit; SW1 is ON, and SW2 through SW4 are OFF.

Inputs of voltage pressure divided at Ra, Rb, Rc, and Rd are sent to the negative side of the comparator; Rc is a contact resistor.

The reference voltage of the comparator, on the other hand, is divided at R1 and R2 and sent to the positive side.

When a point on the tablet receives more than specific force, the contact resistance (Rc) lowers and, as a result, the voltage sent to the negative side of the comparator increases.

The above causes output Vo of the comparator to change from '1' to '0', enabling the microprocessor to know that the tablet was pressed.

2. Reading X Coordinates

Figure 3-116 shows the equalizer circuit of the tablet unit; SW1 and SW2 are ON, and SW3 and SW4 are OFF.

The switches are shifted as shown in Figure 3-116 to lead the divided voltage to the A/D converter, thereby allowing the microprocessor to read the X coordinates.

Since the input impedance of the A/D converter is appreciably large, effects of Rc (contact resistance) on the X coordinates are absent.

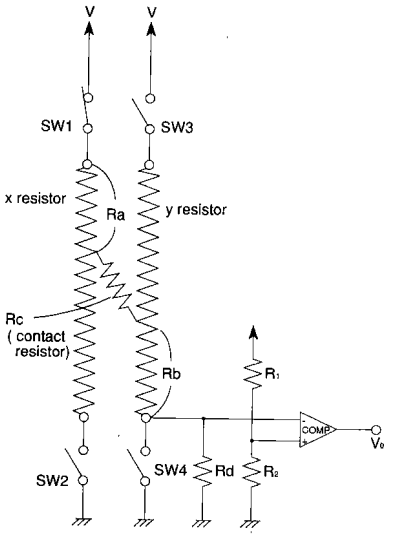

Figure 3-115 Equalizing Circuit of Comparator

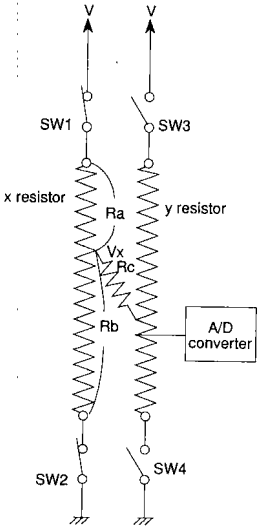

Figure 3-116 Reading X Coordinates

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3. Reading Y Coordinates

The switches are shifted as shown in Figure 3-117 (SW1 and SW2 are OFF, and SW3 and SW4 are ON) to read the Y coordinates as for Y coordinates.

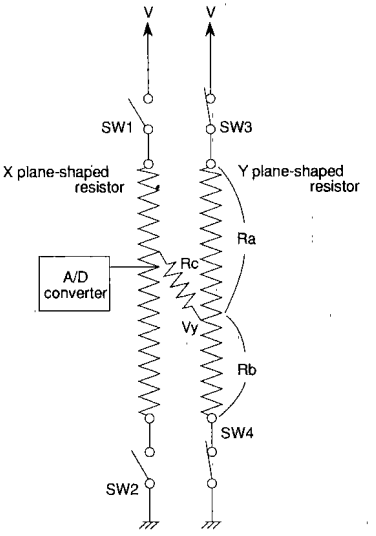

Figure 3-117 Reading Y Coordinates

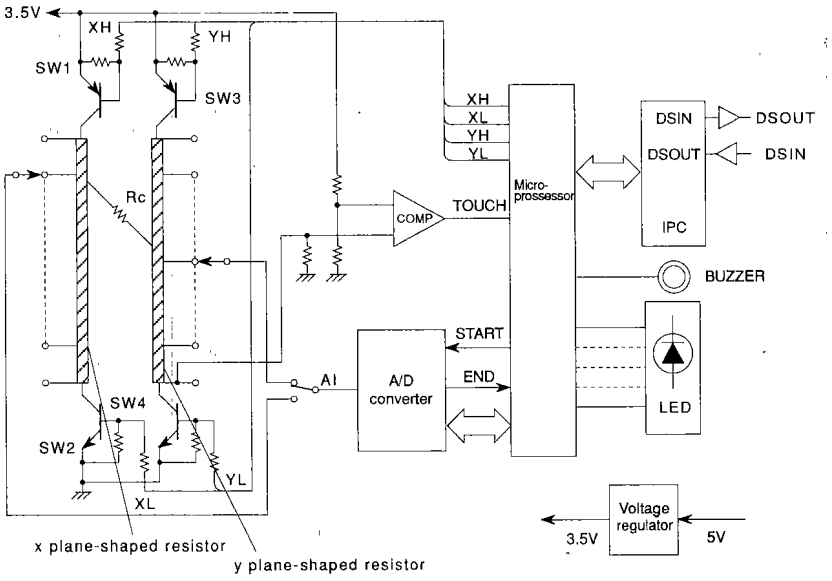

Figure 3-118 Tablet and Editor Controller (block diagram)

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VII. CASSETTE FEEDING UNIT

A. Electrical Circuit

The cassette feeding unit is controlled by the signals from the copier and the controller inside the cassette pedestal.

The copier sends signals to the controller inside the cassette pedestal at such times as programmed in advance.

In response to the signals from the copier and those from the microswitches and sensors, the controller inside the cassette feeding unitl generates signals that drive such loads as motors and clutches.

Figure 3-119 is a block diagram showing the relationship between the major circuits in the cassette feeding unitl.

The cassette feeding unit is supplied with power by the copier, and its controller PCB converts the 24V power to 12V power.

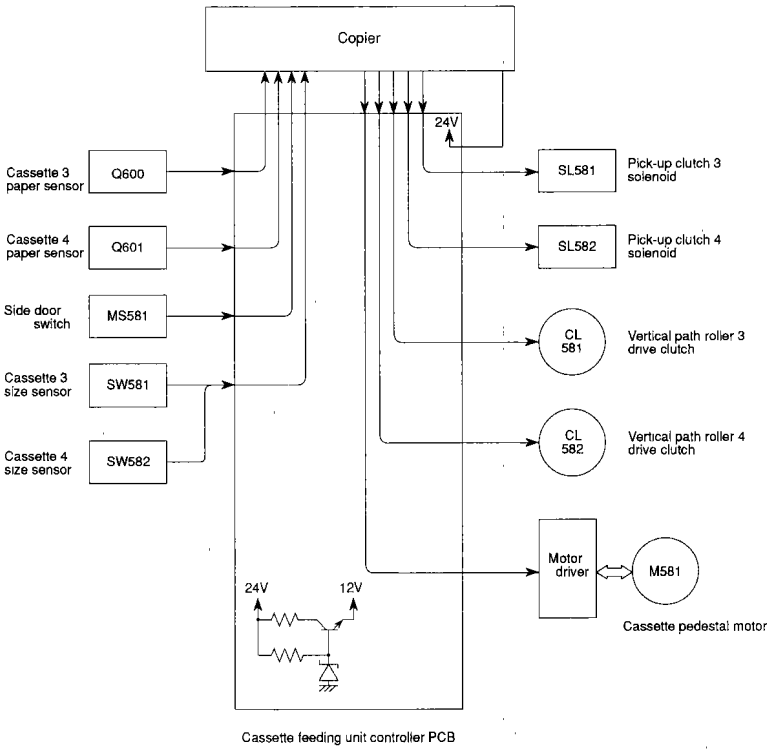

Figure 3-119

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B. Inputs to and Outputs from Cassette Feeding Unit Controller (1/2)

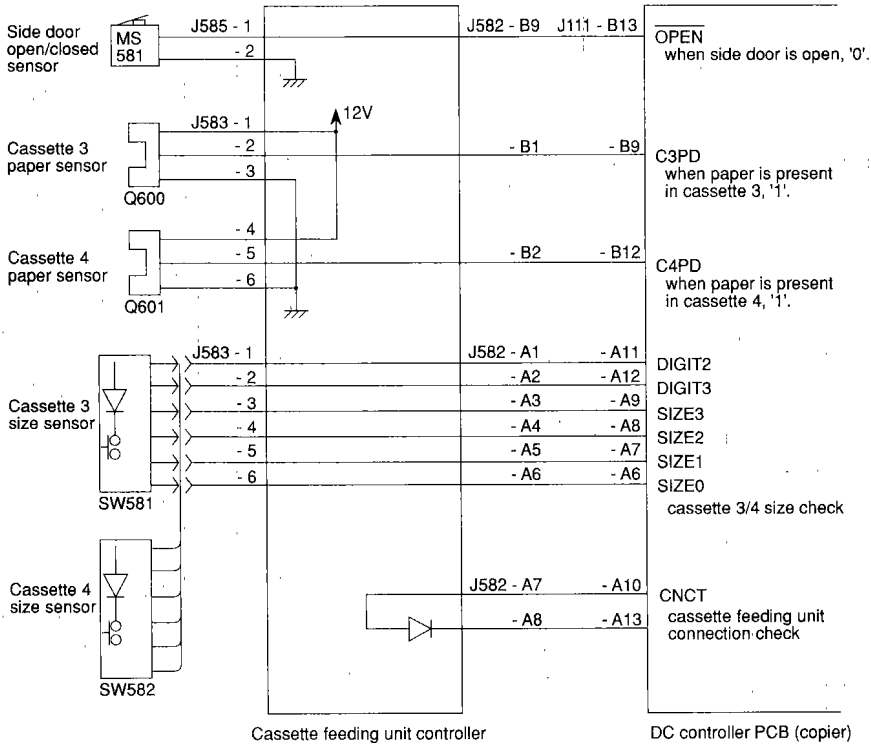

Figure 3-120

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C. Inputs to and Outputs from Cassette Feeding Unit Controller (2/2)

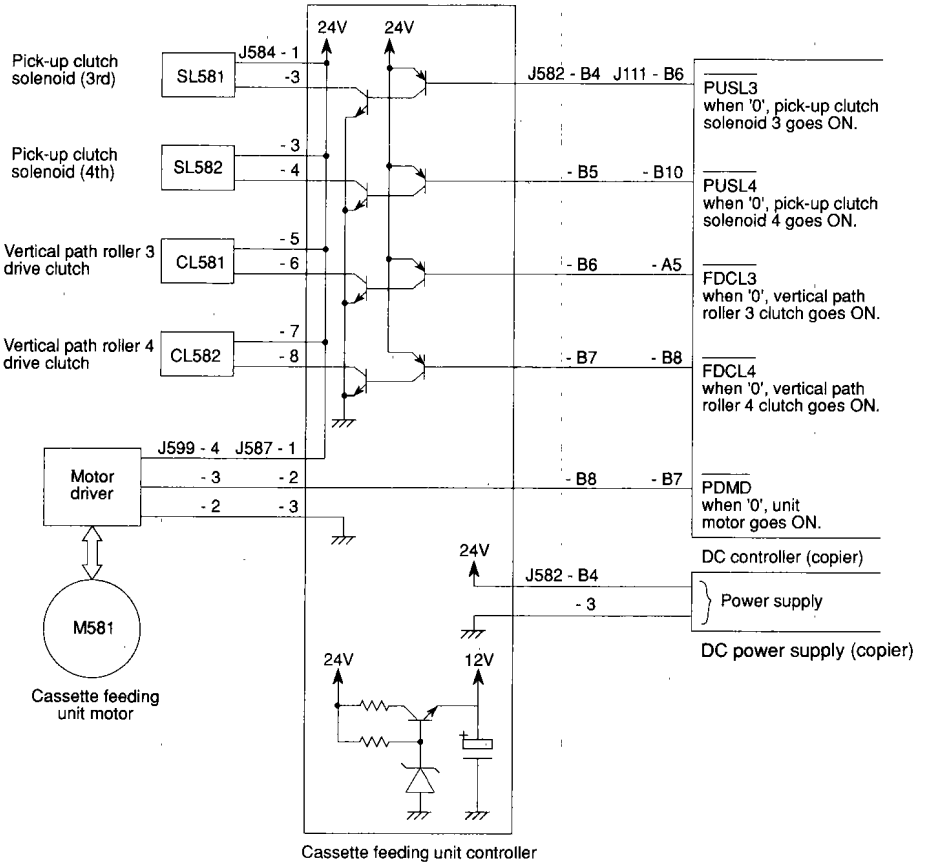

Figure 3-121

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D. Pick-Up and Feeding Operations

When the pick-up clutch solenoid (SL581, SL582) and the vertical path roller drive clutch (CL581, CL582) go ON while the cassette pedestal motor (M581) is rotating, the drive of M581 is transmitted to the pick-up roller and the vertical path roller to pick up and feed copy paper. Such pick-up and feeding operations are controlled by signals from the copier.

Copy paper fed to the copier is forwarded to the registration roller by vertical path roller 2 and vertical roller 1.

Jams of paper from the cassette feeding unit are checked by the copier's pre-registration sensor (PS2; of delay jams); if copy paper is not detected within a specific period of time, the copier will identify the condition as a jam and indicate a message on the control panel.

The presence/absence of a cassette and the size of the cassette, if any, are checked in the same way as in the copier; see p. 3-58.

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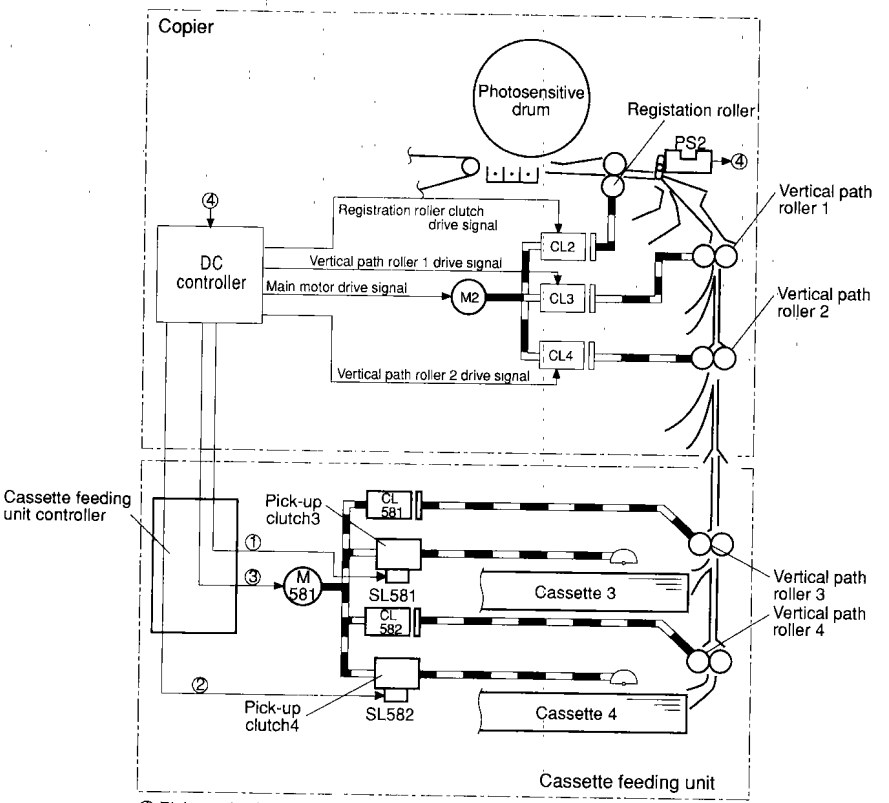

① Pick-up clutch 3 drive signal
② Pick-up clutch 4 drive signal
③ Deck motor drive signal
④ Pre-registration paper sensor signal

Figure 3-122

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a. Pick-up from cassette 3 (A4, 2 copies)

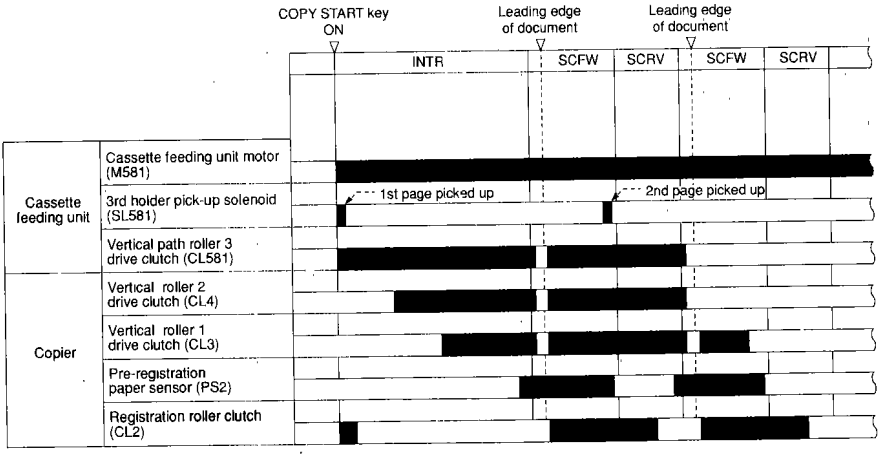

Figure 3-123

b. Pick-up from cassette 4 (A4, 2 copies)

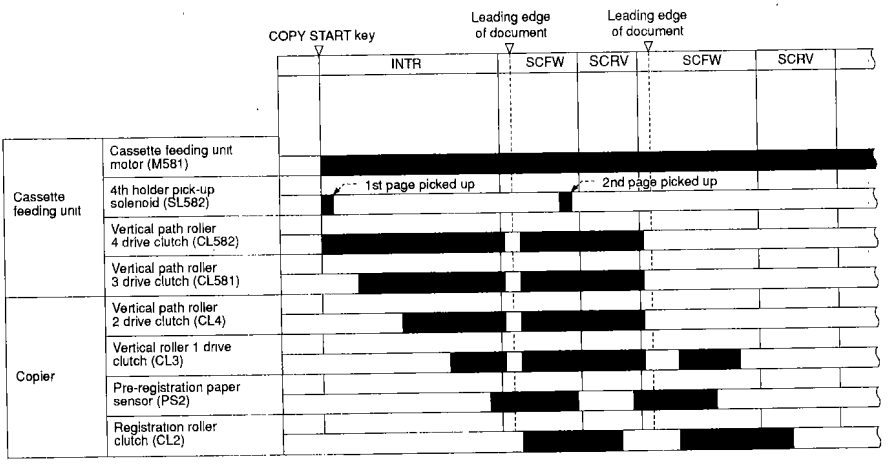

Figure 3-124

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G. Checking for Jams

Jams between the cassette feeding unit and the pick-up/feeder assembly are identified if the paper does not reach the pre-registration paper sensor within a specific period of time after vertical path roller 1 has gone ON.

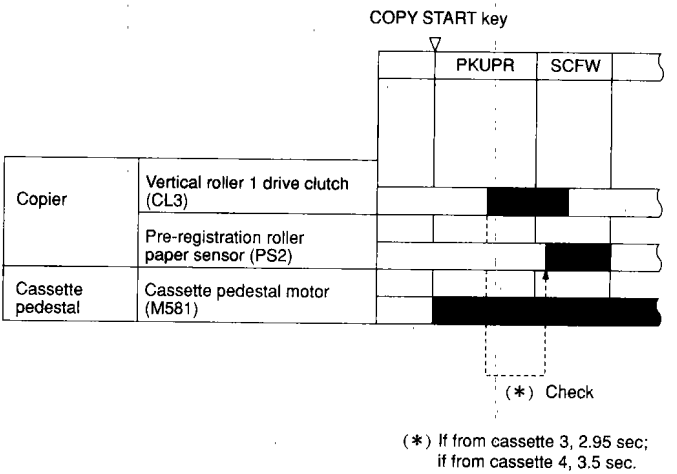

Figure 3-125

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VIII. PAPER DECK PEDESTAL-E1

A .Electrical Circuit

The paper deck is controlled by signals from the copier and the control PCB built inside the deck.

The copier sends signals to the deck control PCB as programmed in advance.

The control PCB inside the deck, on the other hand, sends signals to such loads as motors and clutches inside the deck in response to outputs from the copier and from the microswitches and photosensors inside the deck.

Figure 3-126 shows the relationship between the copier and the paper deck.

Each of the motors, solenoids, and clutches operates using 24V power coming from the copier.

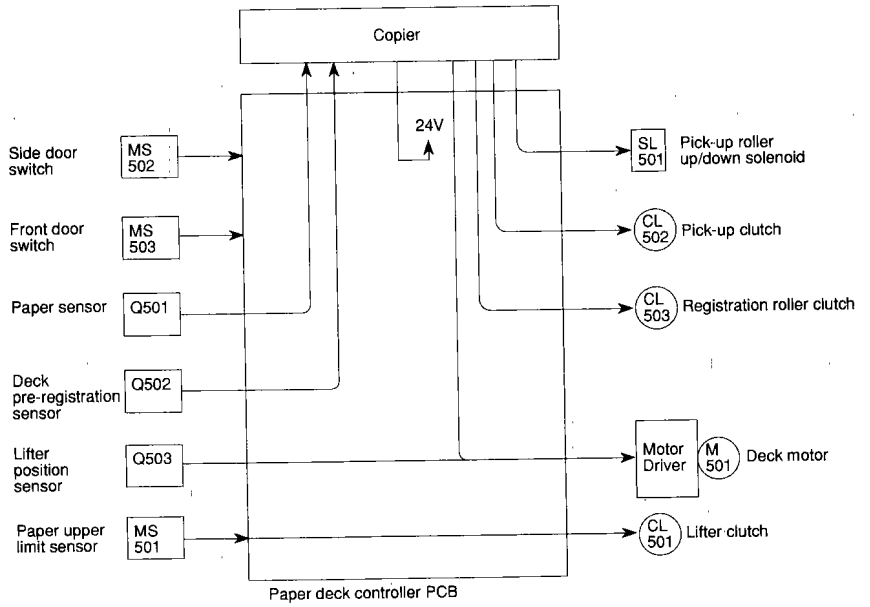

Figure 3-126

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B. Inputs to and Outputs from Deck Controller (1/2)

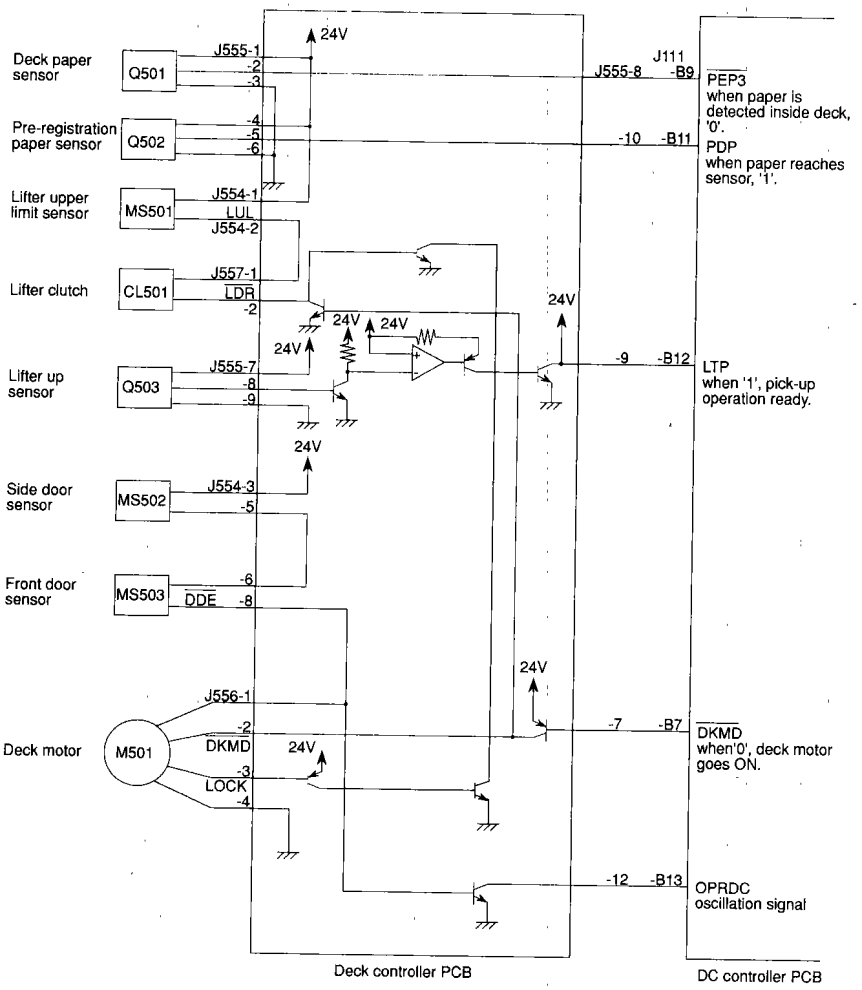

Figure 3-127

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C. Inputs to and Outputs from Deck Controller (2/2)

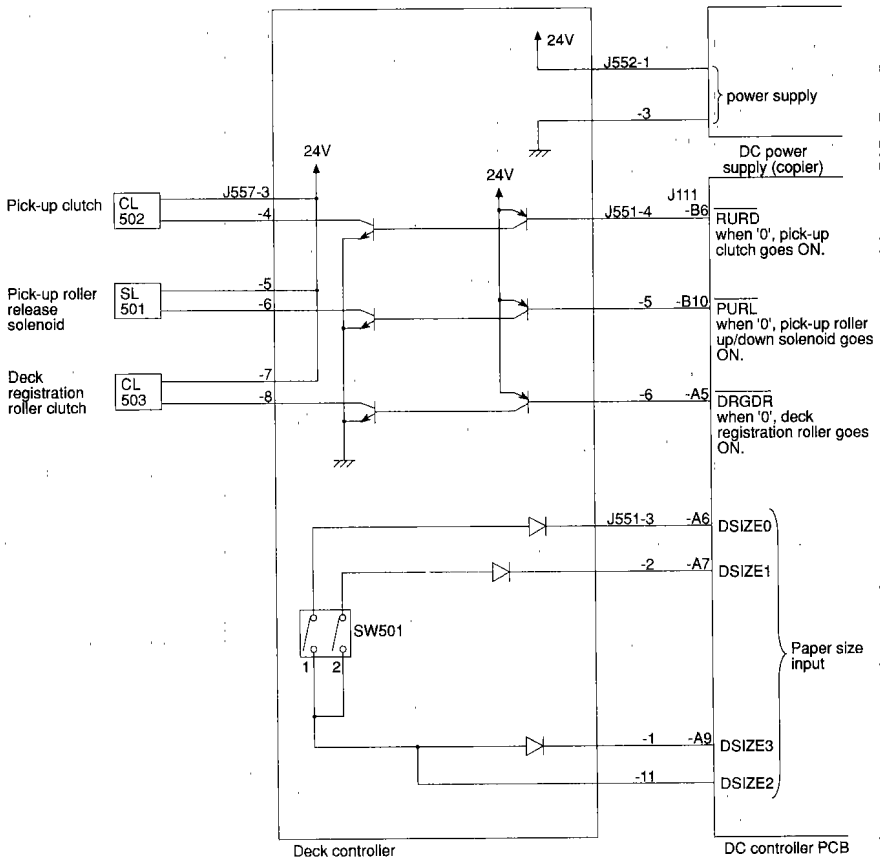

Figure 3-128

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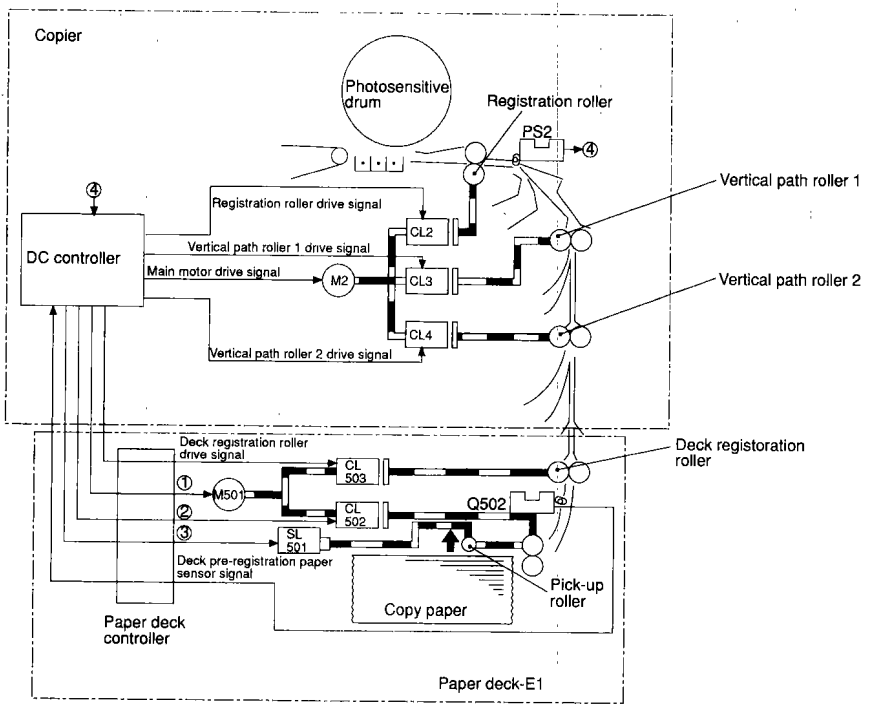
D. Pick-up and Feed Operations

The paper deck picks up and feeds the paper in response to the signals from the copier.

The paper deck motor (M501) is driven in response to the DKMD signal from the copying machine; drive is then transmitted to the pick-up and registration rollers through clutches.

The clutches in turn are under control of the signals from the copier.

When paper is picked up, the pick up roller is raised by the pick-up roller release solenoid (SL501).



① Deck motor drive signal
② Pick-up clutch drive signal
③ Pick-up roller release signal
④ Pre-registration paper sensor signal

Figure 3-129

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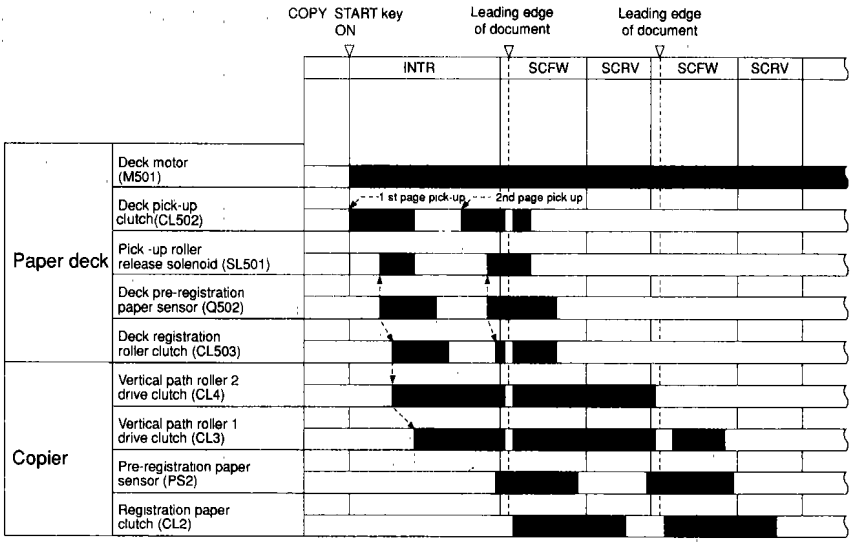

Figure 3-130

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3. Controlling the Lifter Movement (upward)

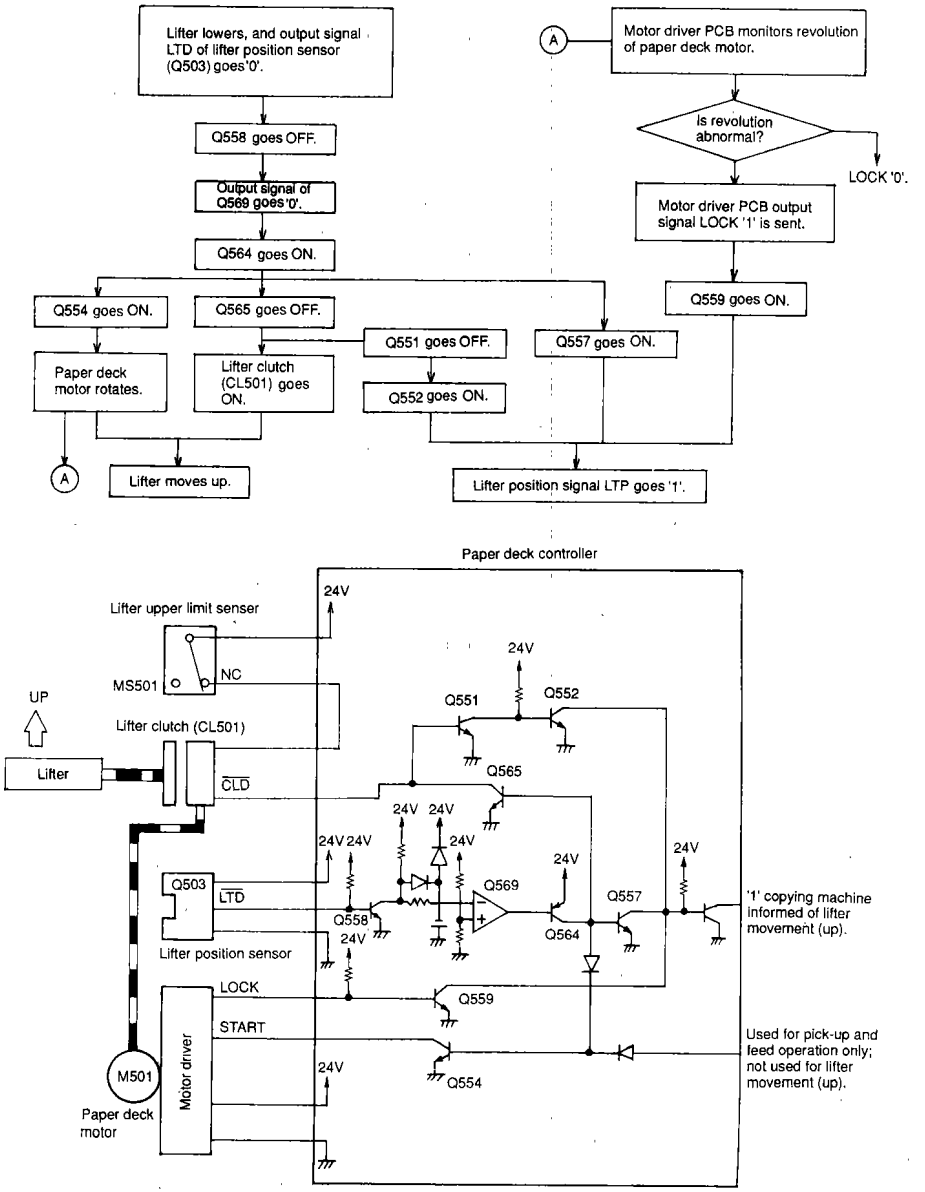

Figure 3-131

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E. Lifter Operations

1. Moving the Lifter Up

① The lifter is raised when all the following conditions are met:

- Power is available from the copying machine.
- The paper deck is installed (MS503 is ON).
- The side door is closed (MS502 is ON).
- The lifter position signal (LTD) is '0' (sensor arm not at Q503).
- The lifter upper limit sensor (MS501) is OFF.

② As soon as a length of about 2 mm of copy paper (20 sheets of 60 g/m2) is fed, the sensor arm moves away from the lifter position sensor (Q503). In turn, the lifter position detection signal ('0') is generated to raise the lifter by about 2mm.

2. Stopping the Lifter (normal, emergency)

When the lifter has moved up and, as a result, the paper pushes up the sensor arm, the sensor arm blocks the position sensor (Q503).

The condition causes the position signal to go '1' and stops the lifter.

Should the lifter keep moving up after the sensor has blocked the position sensor, the sensor arm will press the microswitch (MS501) to stop the lifter.

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F. Checking for Jams

a. Delay Jam at Deck Pre-Registration Sensor
The paper does not reach the deck pre-registration sensor within a specific period of time after the pick-up clutch has gone ON.

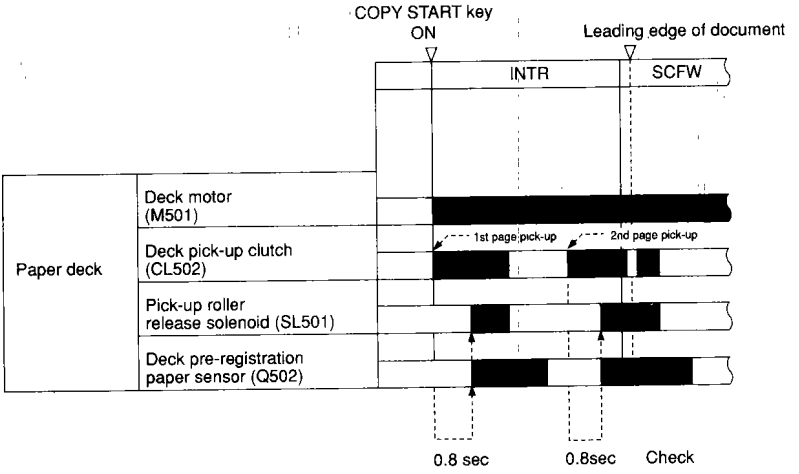

Figure 3-132

b. Delay Jam at Copier Pre-registration Sensor
The paper does not reach the copier pre-registration sensor within a specific period of time after the deck registration clutch has gone ON.

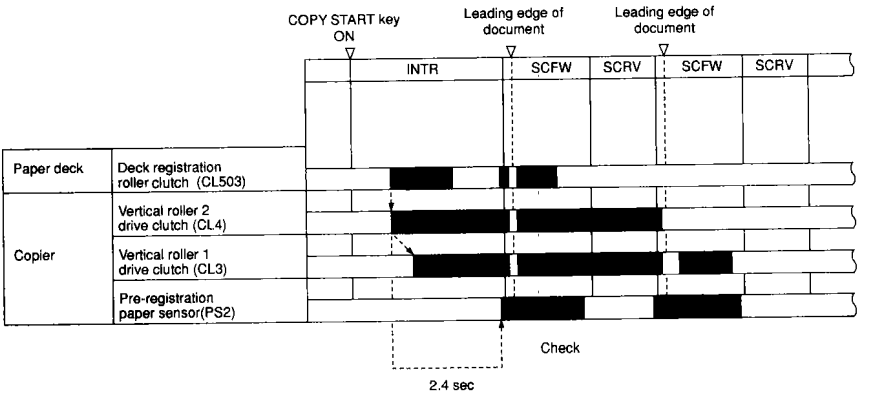

Figure 3-133

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IX. PAPER DECK PEDESTAL- D1

A. Electrical Circuit

The paper deck is controlled by signals from the copier and the deck controller PCB inside the deck.

The copier sends signals to the deck as programmed in advance.

The controller inside the deck sends signals to control the motors, clutches, and other loads according to the signals from the copier.

The deck controller is supplied with 24V power by the copier's DC power supply and, in turn, supplies each load with 24V or 12V power.

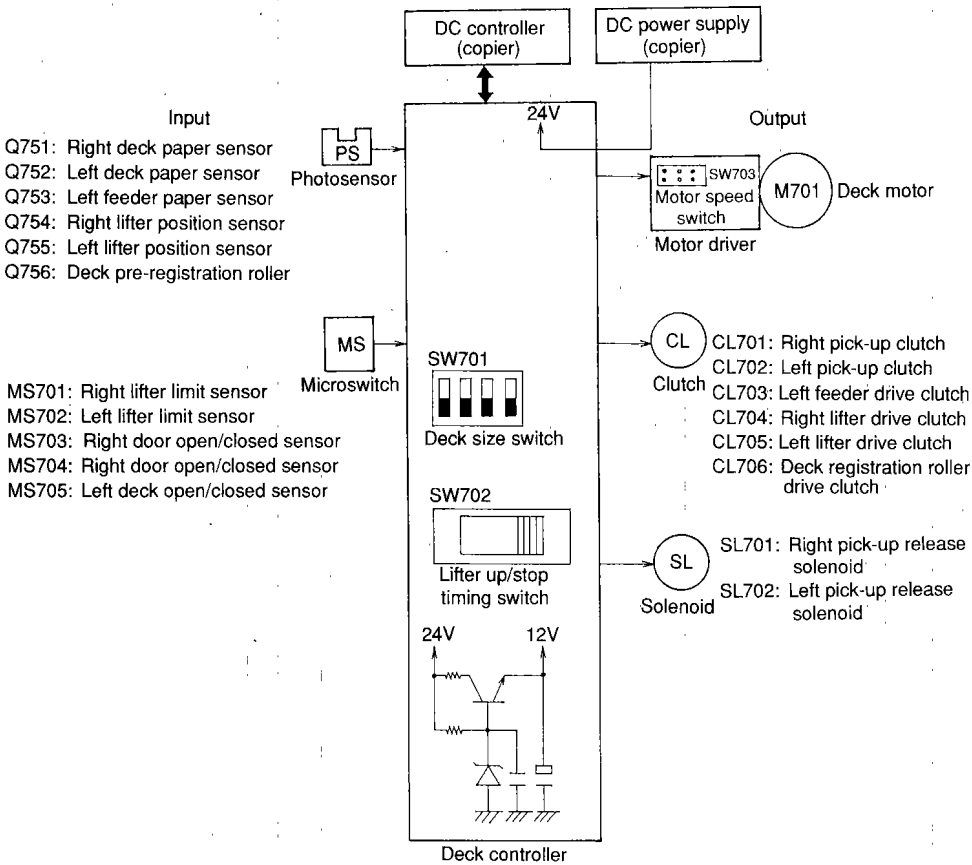

Figure 3-134

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B. Inputs to and Outputs from Paper Deck Controller (1/3)

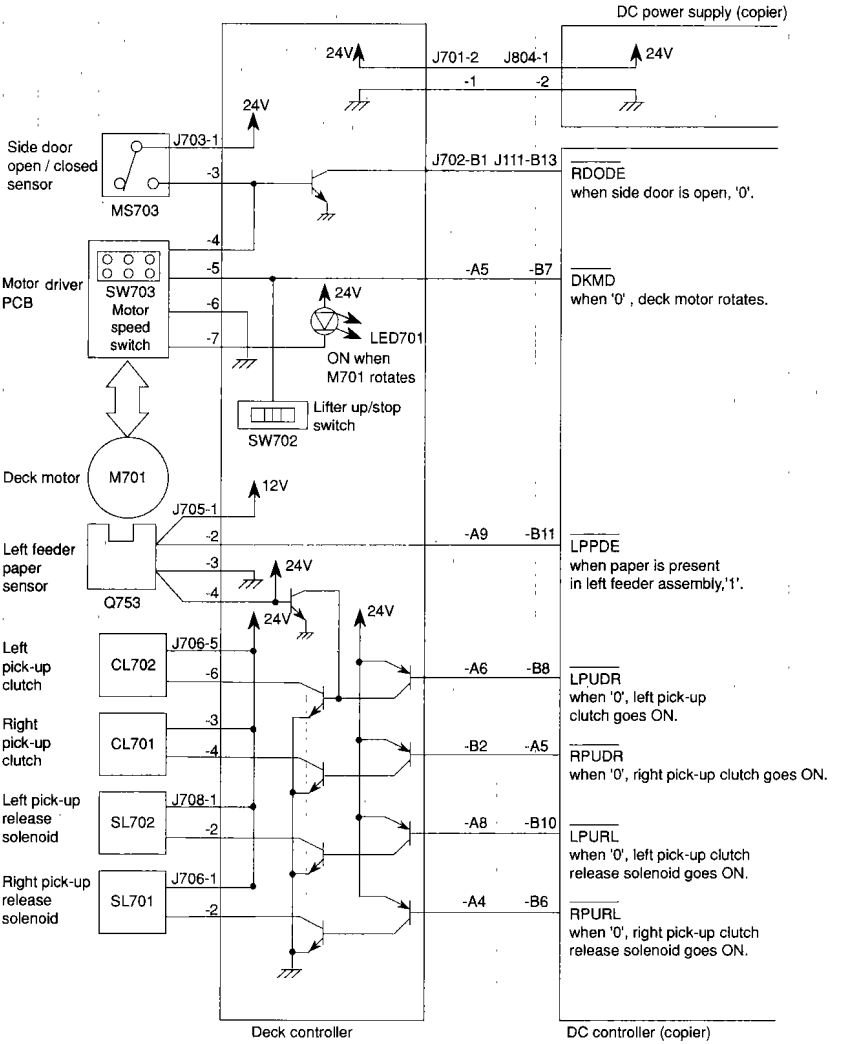

Figure 3-135

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Inputs to and Outputs from Paper Deck Controller (2/3)

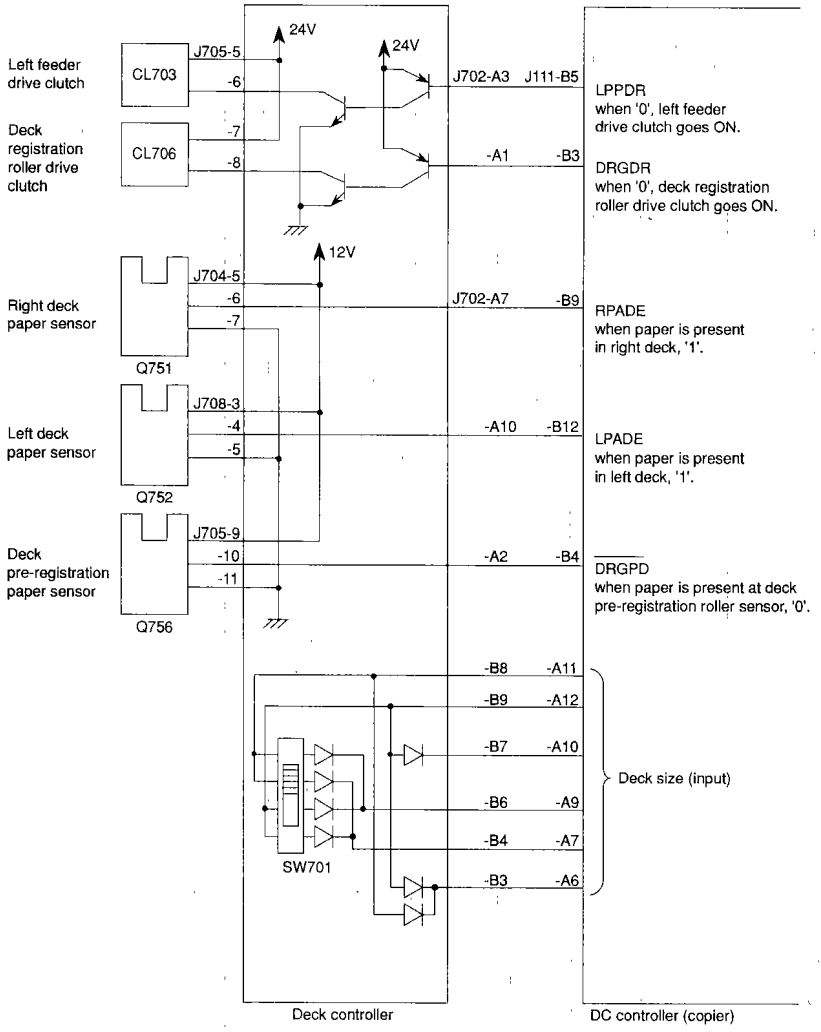

Figure 3-136

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Inputs to and Outputs from Paper Deck Controller (3/3)

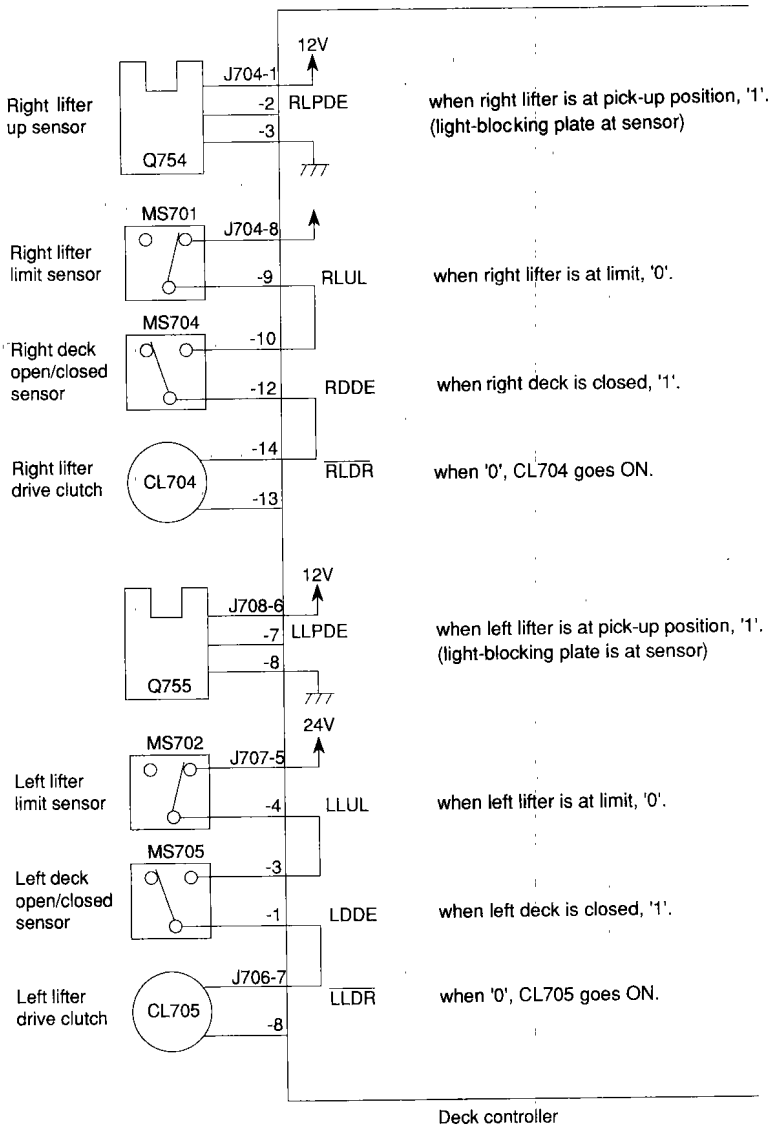

Figure 3-137

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C. Outline

The paper deck is equipped with two built-in decks (left, right) and feeds paper to the copier.

The motor handles pick-up operations and drives the left and right lifters and other loads.

The left feeder assembly found between the left deck and the deck registration roller keeps a single sheet of copy paper picked up from the left deck after each copy run, thereby shortening the first copy time, which otherwise would be longer when paper is picked up from the left deck.

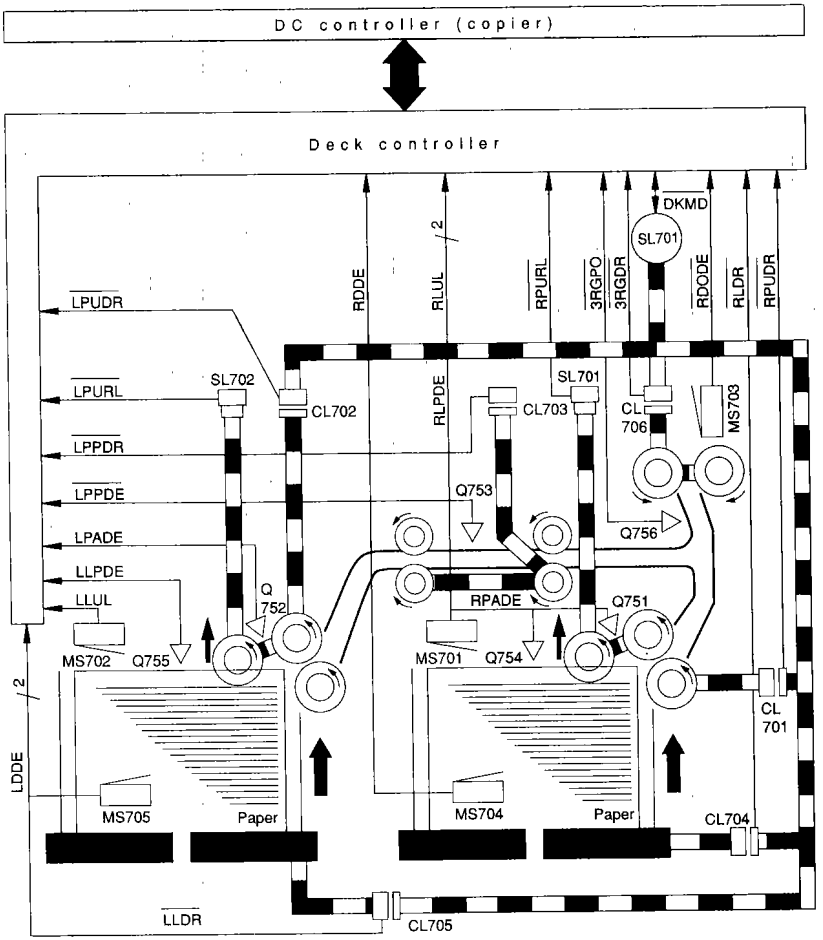

Figure 3-138

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1. Names of Parts

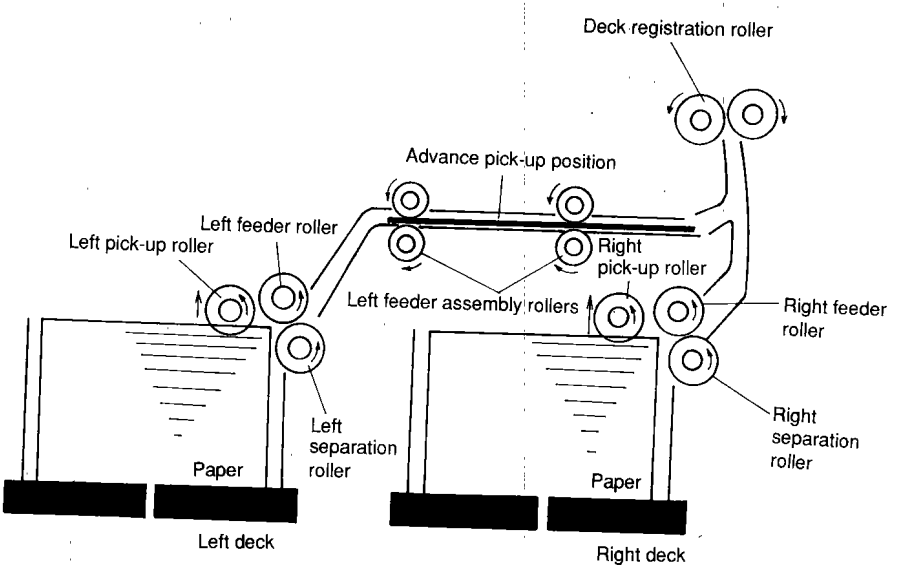

Figure 3-139 Parts of Deck

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D. Pick-Up/Feed Operations

① Pick-Up from Right Deck

When the COPY START key is pressed on the copier, the copier's DC controller PCB generates the deck motor drive signal ($\overline{DKMD}$), causing the deck motor to rotate; at the same time, the right pick-up roller starts to rotate to pick up paper from the right deck.

The paper then is moved to the deck pre-registration roller by the right feeder roller; after the paper has formed an arc in front of the deck pre-registration roller, it moves on to the copier's vertical path assembly.

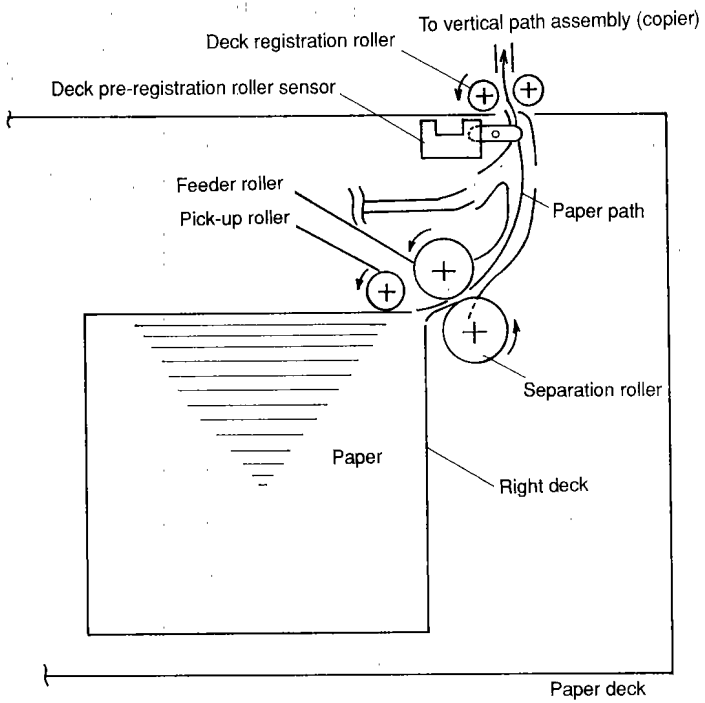

Figure 3-140 Pick-Up from Right Deck

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② Pick-Up from Left Deck

When the COPY START key is pressed on the copier, the copier's DC controller PCB generates deck motor drive signal (DKMD), causing the deck motor to rotate; at the same time, the left pick-up roller starts to rotate, picking up paper from the left deck.

The paper moves through the left feeder assembly and, then, moves on to the deck registration assembly.

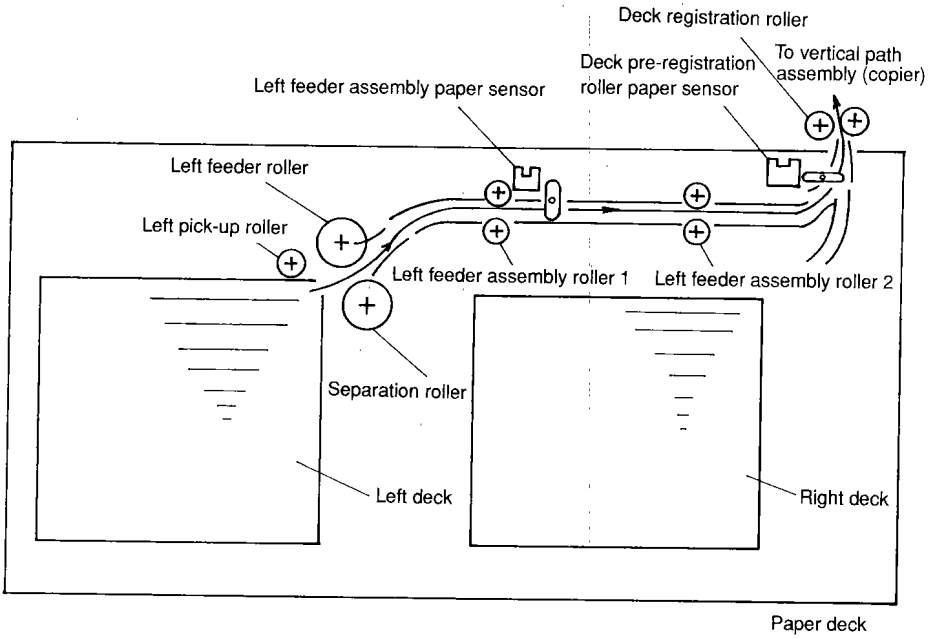

Figure 3-141

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③ Advance Pick-Up from Left Deck

When the pick-up is from the left deck, a sheet of paper is picked up after each copy run. The paper is not fed to the copier but is kept waiting for the next copy run. This mechanism is called *advance pick-up* and shortens the first copy time when the pick-up is from the left feeder assembly, which has a long paper path.

The copier remembers the advance pick-up even after it is switched OFF; therefore, the presence of paper in the left feeder assembly will not be identified as a stationary jam.

If, for some reason, the paper is removed after an advance pick-up, a new sheet of paper is picked up from the deck at the start of a copy run; when the final copy run is over, an additional sheet of paper will then be picked up and made to wait for the next copy run.

Note:

If the COPY START key is pressed with the left feeder assembly slid out, the pick-up clutch will not go ON. In this case, a delay jam in the left feeder assembly will be identified, as the copier will not recognize the presence of the left feeder assembly.

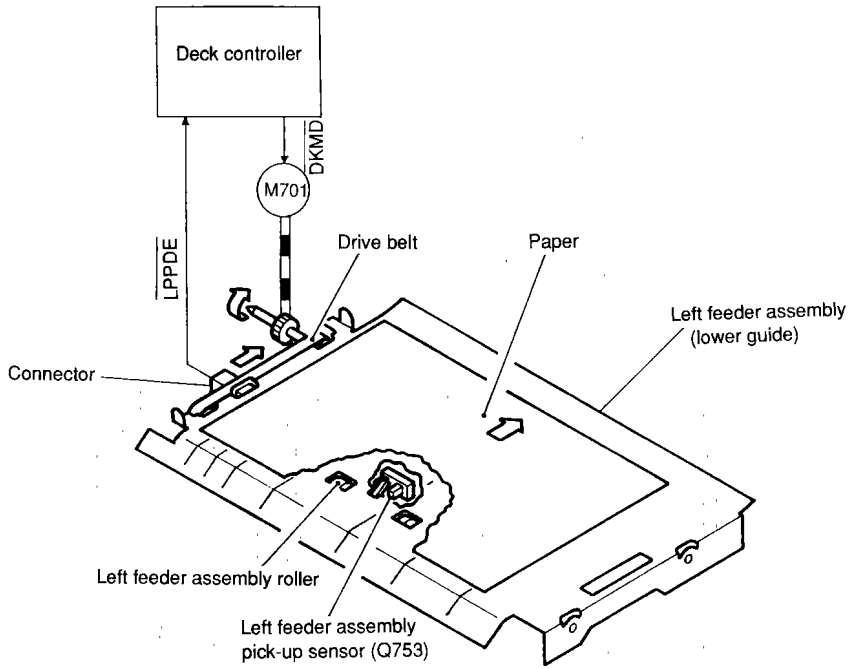

Figure 3-142

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a. Sequence of Pick-Up (A4, 2 copies; from right deck)

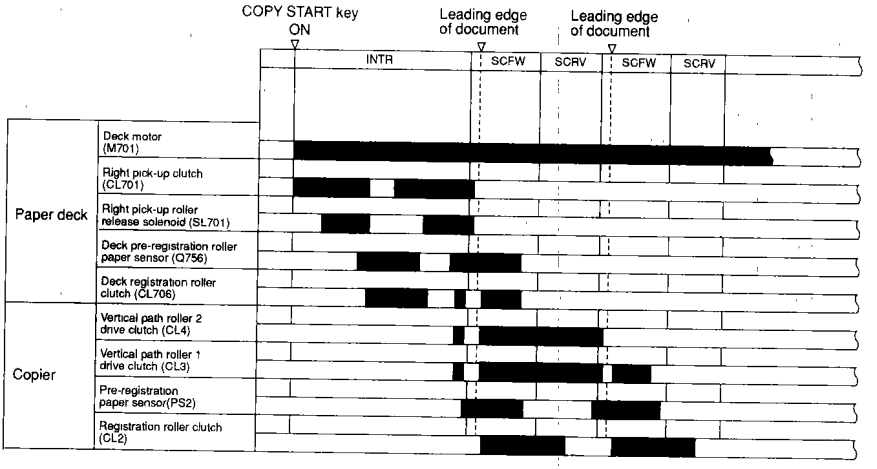
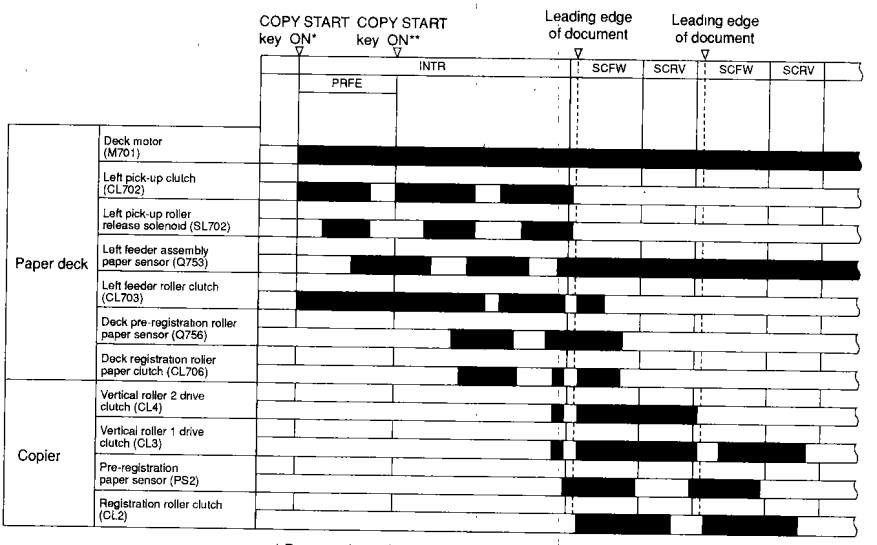


Figure 3-143

b. Sequence of Pick-Up (A4, 2 copies; from left deck)



* Paper is absent in the left feeder assembly when the COPY START key is pressed.

** Paper is present in the left feeder assembly when the COPY START key is pressed.

Figure 3-144

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D. Releasing the Pick-Up and Separation Rollers (both right and left decks)

The paper deck is of a front a loading type; as such, both decks are pulled out for a supply of paper.

When the deck is pulled out, the pick-up and separation rollers are released; this design facilitates positioning of the deck and clearing of jams.

1. Releasing the Pick-Up Roller

The pick-up roller is released as soon as the grip of the deck is pulled.

When the latch on the grip comes off the cam on the edge of the roller release shaft, the arm on the roller release shaft rises and the pick-up roller, in turn, is raised.

On the other hand, when the latch on the grip pushes up the cam upon insertion of the deck, the arm lowers and, in turn, the pick-up roller is lowered.

The arm is also used to release the pick-up roller during pick-up operation.

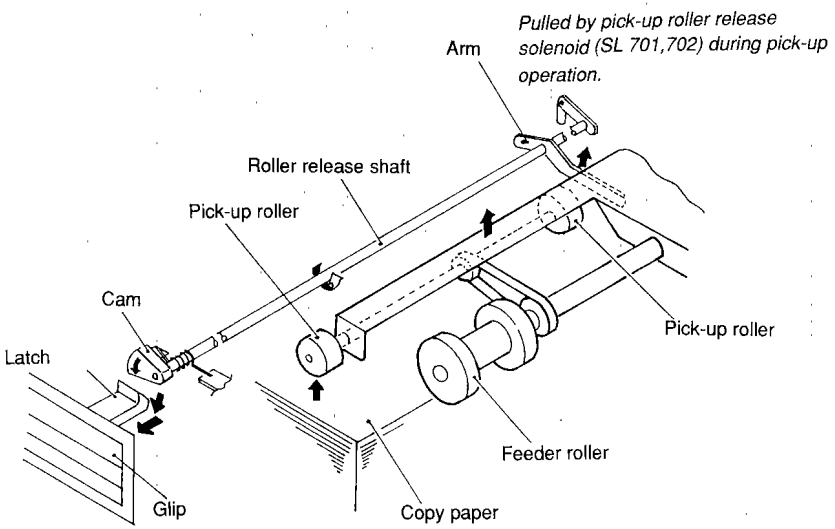

Figure 3-145

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2. Releasing the Separation Roller (both left and right decks)

When the deck is slid out, the release lever kept under the force of the right end plate cam moves the separation roller to the release direction using the force of the release spring. The separation roller is designed to be released so as to prevent interference between the deck rear plate and the separation roller when the deck is slid out.

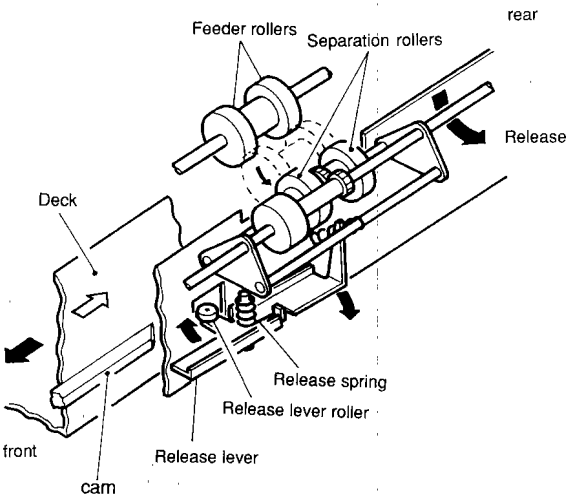

Figure 3-146

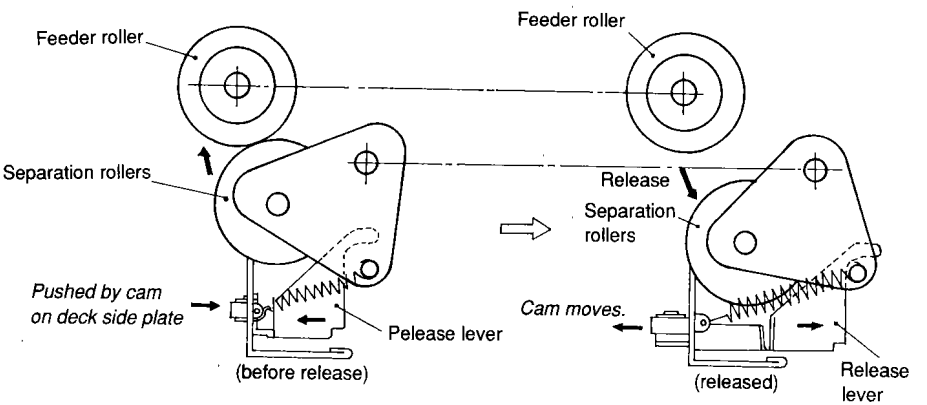

Figure 3-147

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E. Moving the Lifter Up and Down (both left and right decks)

When paper is set and the deck is closed, the deck open/closed sensor (MS704, MS705) goes ON and the deck motor starts to rotate; at the same time, the lifter drive clutch (CL704, CL705) goes ON to move up the lifter.

When the lifter has moved up and reached the lifter up sensor (Q751, Q752), the lifter clutch goes OFF. The lifter then is kept up by the one-way gear.

The lifter is moved up as long as the copier's power switch is ON regardless of the deck's state.

When the deck is slid out, the cable take-up gear becomes disengaged from the one-way gear, causing the lifter to lower by its own weight.

Note:

If the lifter fails to stop after it has reached the lifter up sensor, the lifter limit sensor micro-switch (MS701, MS702) will cut off the power to the lifter drive clutch (CL704, CL705).

If the left feeder assembly is not correctly set in the 3K deck, the lifter will not be moved up.

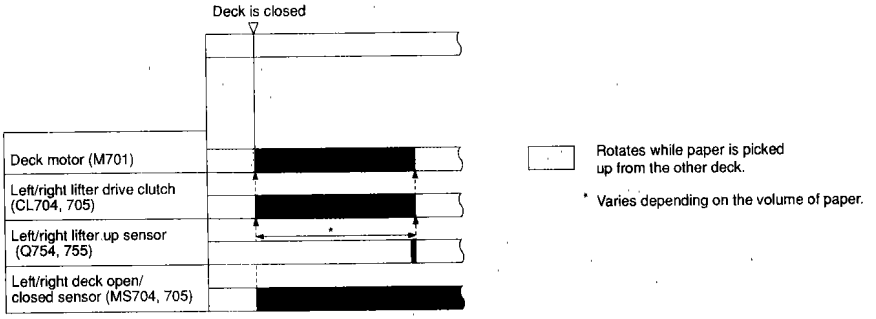
Deck is closed
Deck motor (M701)
Left/right lifter drive clutch (CL704, 705)
Left/right lifter up sensor (Q754, 755)
Left/right deck open/ closed sensor (MS704, 705)
Rotates while paper is picked up from the other deck.
* Varies depending on the volume of paper.

Figure 3-148 Deck Movement (up)

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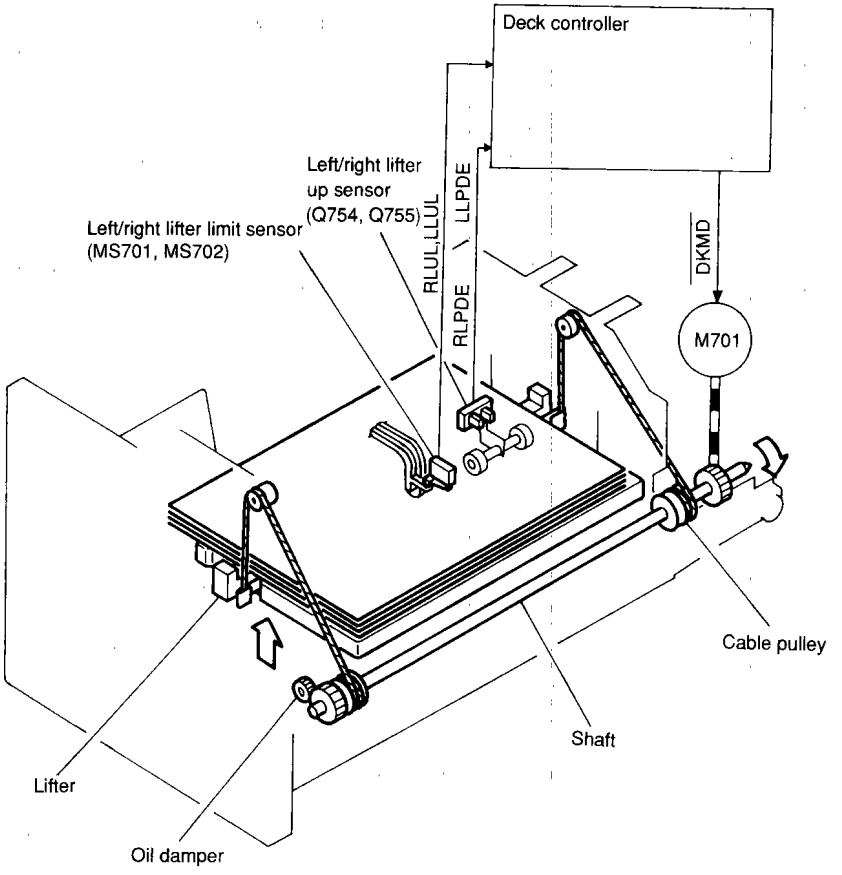

Figure 3-149 Parts Used to Move Up the Lifter

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F. Checking for Paper in Deck (both left and right decks)

The deck paper sensor is found on the plate to which the lifter up sensor is attached.

When paper is present on the lifter, the movement (up) of the lifter causes the sensor arm to move to the left/right deck paper sensor to check the presence of paper.

If paper is absent, the sensor arm will move into the hole in the lifter plate after having moved up to a specific position; the condition will hold up the arm and, therefore, will be identified as the absence of paper.

If the lifter fails to move up to a specific position for some reason, even in the presence of paper, the condition will be identified as the absence of paper.

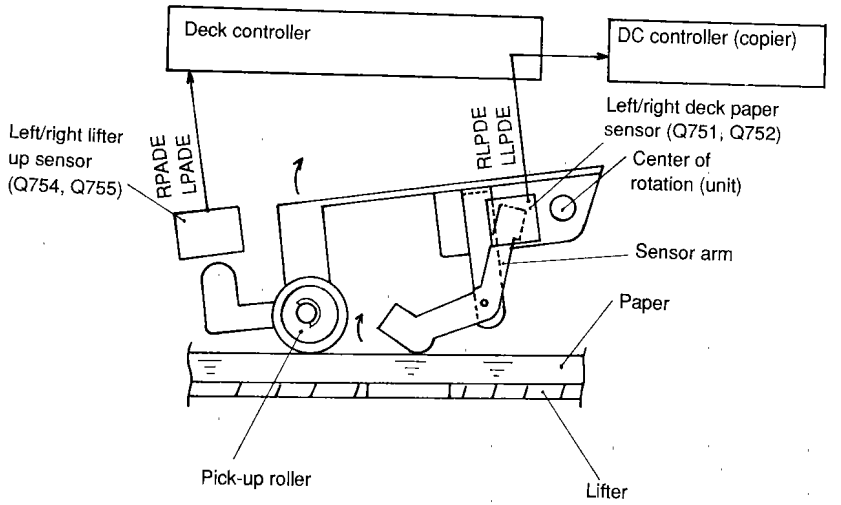

Figure 3-150 Paper Present on Lifter

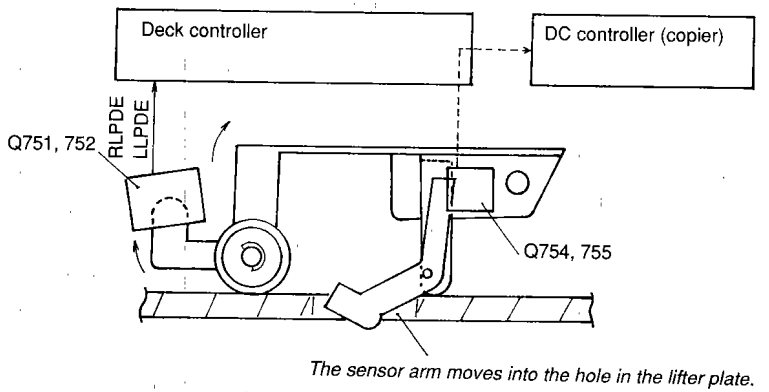

Figure 3-151 Paper Absent on Lifter

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G. Checking for Jams

1. Right Deck

a. Delay Jam at Deck Pre-Registration Roller
The paper does not reach the deck pre-registration roller within a specific period of time after the pick-up clutch has gone ON.

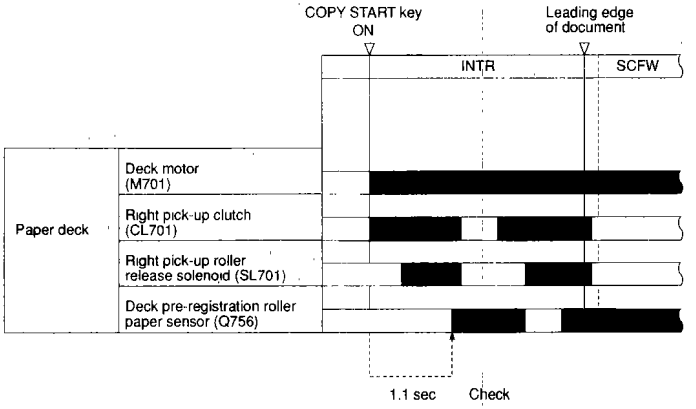

Figure 3-152

b. Delay Jam at Copier Pre-Registration Roller
The paper does not reach the copier pre-registration paper sensor within a specific period of time after the deck registration clutch has gone ON.

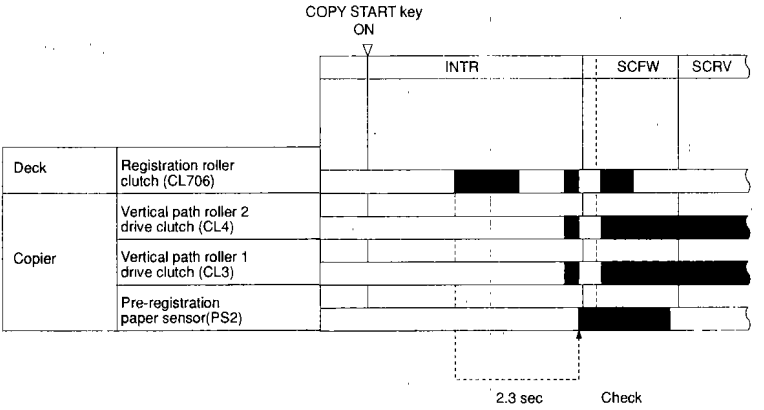

Figure 3-153

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2. Left Deck

a. Delay Jam at Left Feeder Paper Sensor
The paper does not reach the left feeder paper sensor within a specific period of time after the pick-up clutch has gone ON.

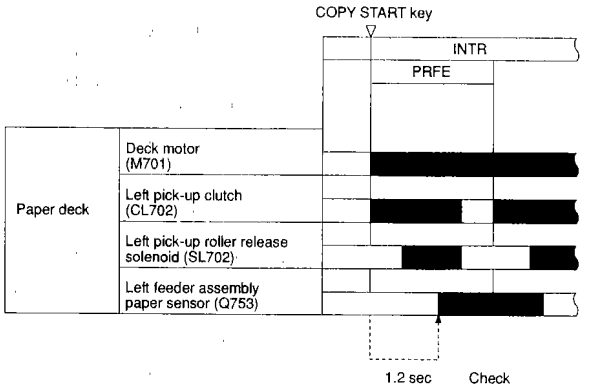

Figure 3-154

b. Delay Jam at Deck Pre-Registration Roller
The paper (advance pick-up) does not reach the deck pre-registration paper sensor within a specific time after the pick-up clutch has gone ON.

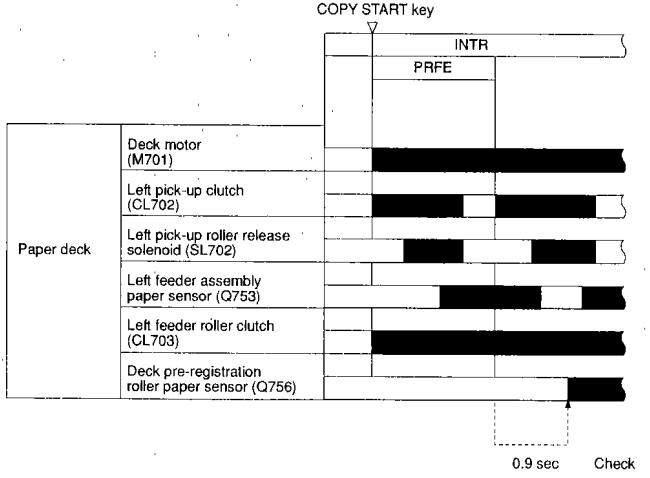

Figure 3-155

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X. SERVICE MODE

A. Outline

The machine's service mode consists of the following six modes:

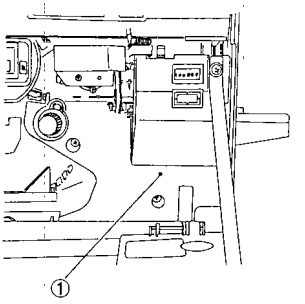
Item	Display	Mode
✱ 1 ✱	DISPLAY	control display
✱ 2 ✱	I / O	I / O display
✱ 3 ✱	ADJUST	adjustment
✱ 4 ✱	FUNCTION	function / inspection
✱ 5 ✱	OPTION	machine settings / user options
✱ 6 ✱	COUNTER	counter

Table 3-7

If NP3030, such items as overlay, two-sided copying and CD unit are displayed. But input is not accepted.

B. Using the Service Mode

1) Open the front door, and insert the door switch actuator. To check on the 'I/O display mode' or others while making copies, set the copy modes.
2) Push the service mode switch using a hex key.
   · The machine enters the service mode and indicates '$' in the lower right corner of the message display.



① Service mode switch

Figure 3-156

3) Enter the number of the mode to check or adjust using the ✱ key and the numeric keypad; for example, press ✱, 3, and then ✱ The display shows the adjustment mode screen.
4) Press the COPY DENSITY key to select the desired screen.
5) Make checks or adjustments as desired.
6) Press the RESET key to close the service mode screen.
7) Press the RESET key once again to leave the service mode.

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C. Using the Adjustment Mode and the Settings Mode

Using the adjustment mode and the settings mode, data that can be entered from the control panel may be stored in the RAM on the DC controller PCB for later use in place of variable resistors and switches.

Figure 3-157 depicts the label attached behind the machine's front door.

Each machine is individually adjusted at the factory, and settings are recorded on the label.

Enter these settings after replacing the DC controller or initializing the RAM. Likewise, record any new settings entered in the field on the label.

	TYP		
AE_LIGHT			
REGIST			
LE_BLANK			
LIGHT_5			
LIGHT_1	1 4		
LIGHT_9	2 8		
BIAS_BK			
BIAS_C			
TRN_1			
TRN_2			
SEP_1			
SEP_2			
AE_SLOP	1 0 0		
BIAS_BL	1 0 0		
BIAS_G	1 0 0		
BIAS_BR	1 0 0		
GRID			
DOC_STOP			

Figure 3-157

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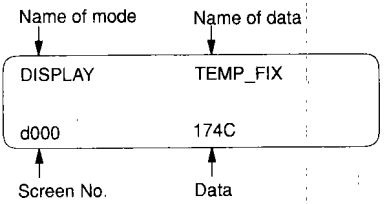
D. Control Display Mode (※1※)

Select the screen using the COPY DENSITY key.



Screen No.	Name of data	Description	Remarks
d000	TEMP_FIX	surface temperature of upper fixing roller (output of thermistor)	unit : ℃
d001	Q161	version of copier's ROM (Q161)	See Guide to Versions.
d002	DF	version of RDF's ROM	
d003	SORT	version of sorter's ROM	
d004	AE	AE date (output of AE sensor)	displays '0' through 'FF'
d005	B_JAM	copier's jam code	See Table 3-8.
d006	F_JAM	RDF's jam code	See Table 3-9.
d007	S_JAM	sorter's jam code	See Table 3-10.
d008	B_ERR	copier self diagnosis code	
d009	F_ERR	RDF self diagnosis code	
d010	S_ERR	sorter self diagnosis code	
d011	B_ALRM	copier's alarm	See Table 3-11.
d012	F_ALRM	RDF's alarm	See Table 3-12.
d013	S_ALRM	sorter's alarm (2 digits on left, tray ; 2 digits on right; stapler)	See Table 3-13, 14.
d014	ED_X	editor input coordinate x	displays in 0. 1mm increments
d015	ED_Y	editor input coordinate y	displays in 0. 1mm increments
d016	DCMET_0	document size sensor 0	displays in 0.01V increments (slice level for present / absent, 3.30V)
d017	DCMET_1	document size sensor 1	
d018	DCMET_2	document size sensor 2	

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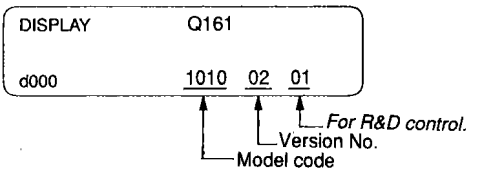
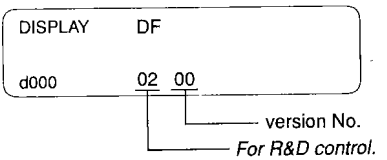
Guide to Version Display

1. Q161 (copier)



Model code	Description
1010	copier master CPU message (Japanese)
1020	copier master CPU message (English)
1030	copier master CPU message (French)
1040	copier master CPU message (German)
1050	copier master CPU message (Danish)
1060	copier master CPU message (Dutch)
1070	copier master CPU message (Finnish)
1080	copier master CPU message (Italian)
1090	copier master CPU message (Norwegian)
10A0	copier master CPU message (Portuguese)
10B0	copier master CPU message (Spanish)
10C0	copier master CPU message (Swedish)

2. DF/Sorter



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Jam code	Description
01	delay jam identified by pre-registration paper sensor (PS2)
02	delay jam identified by delivery sensor (PS6)
04	stationary jam identified by delivery sensor (PS6)
08	delay jam identified by lower feeder inlet paper sensor (PS7)
10	stationary jam identified by lower feeder inlet paper sensor (PS7)
20	delay jam identified by deck pre-registration paper sensor (Q756)
21	delay jam identified by left feeder assembly paper sensor (Q753)
40	sorter jam
80	door opened during copying
81	pre-registration paper sensor (PS2) detects paper at power-on
82	delivery paper sensor (PS6) detects paper at power-on
83	lower feeder assembly inlet paper sensor (PS7) detects paper at power-on
84	lower feeder outlet paper sensor (PS8) detects paper at power-on
85	manual feed pick-up sensor (PS11) detects paper at power-on
86	paper detcted by deck pre-registration sensor (Q756) at power-on
87	machine switched OFF during copying and then ON
88	paper detected by left feeder paper sensor (Q753) at power-on; excludes pre-pick up

Table 3-8 Copier Jam Codes

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Jam code	Description
01	document pulled out with RDF in use
02	delay jam identified by RDF pick-up sensor
03	delay jam identified by registration sensor
05	stationary jam identified by registration sensor
06	double feeding identified by registration sensor
08	leading edge of document not identified by registration sensor with RDF in use (pick-up)
11	delay jam 1 identified by reversal sensor
12	stationary jam identified by reversal sensor
13	delay jam 2 identified by reversal sensor
20	initial stationary jam identified by reversal sensor
21	reversal pick-up delay jam identfied by registration sensor
23	reversal pick-up stationary jam identified by registration sensor
25	leading edge of document not identified by registration sensor at time of reversal pick-up
41	delay jam identified by delivery sensor
42	stationary jam identified by delivery sensor

Jam code	Description
81	RDF identified as open
82	pick-up tray of upper cover identified as open
83	delivered document not identified by document sensor (document circulation fault)
84	document identified by sensor at time of pick-up (jam document)
85	jam unique to test mode
88	document identified at time of 1st page document pick-up
89	recycle bar movements fault at time of document circulation (2nd cycle or later)
8A	feeding fault of documents of mixed sizes with ADF in use
8B	document identified by last document trailing edge sensor after pick-up

Table 3-9 RDF Jam Codes

Jam code	Description
01	delay jam identified by fold sensor
02	stationary jam identified by fold sensor
03	delay jam identified by paper sensor
04	stationary jam identified by paper sensor
06	staple jam
07	paper identified by sensor at power-on
08	joint switch or cover switch OFF during copying
0A	stationary jam (staple tray)
0B	stapler safety mechanism ON

Table 3-10 Sorter Jam Codes

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Alarm code	Description
02	right door open
03	lower right door open
10	side registration error
30	cleaning belt short
40	waste toner receptacle full
61	primary corona wire automatic cleaning faulty
62	transfer/separation corona wire automatic cleaning faulty
63	primary and transfer/separation corona wire automatic cleaning faulty (both)*

*The copier retains memory of the type of alarm until corona wires are cleaned in the asterisk mode ✱5✱; until execution, automatic cleaning in response to power-on will not be performed.

Table 3-11 Copier's Alarm

Alarm code	Description
01	recycle lever idle swing
03	pick-up faulty
05	override on paper stop plate
11	document count different after jam removal
12	document count not correct
13	document forced off

Table 3-12 RDF Alarm

Alarm code	Description
01	paper fold unit power OFF
02	overstacking

Table 3-13 Sorter Tray Alarm

Alarm code	Description
01	stapler down
02	staple jam
05	stapler overstacking
06	stapler full stacking
07	mixed paper sizes (horizontal)
08	stapler unit absent
09	stapled sheets identified
0A	staple absent

Table 3-14 Sorter Stapler Alarm

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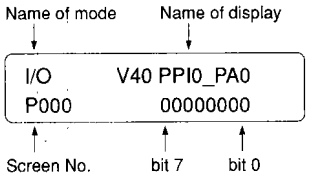
E. I/O Display Mode (☒2☒)

Select the desired screen using the COPY DENSITY key.
- The mode allows checks on the 8-bit input/output of each port.



Screen No.	Name of display	Description		Remarks
P000	V40 PPI0_PA0	I/O port IC (Q168)	port PA0 input/output	
P001	V40 PPI0_PB0		port PB0 input/output	
P002	V40 PPI0_PC0		port PC0 input/output	
P003	V40 PPI0_PA1		port PA1 input/output	
P004	V40 PPI0_PB1		port PB1 input/output	
P005	V40 PPI0_PC1		port PC1 input/output	
P006	V40 PPI0_PA2		port PA2 input/output	
P007	V40 PPI0_PB2		port PB2 input/output	
P008	V40 PPI0_PC2		port PC2 input/output	
P009	V40 PPI1_PA0	I/O port IC (Q163)	port PA0 input/output	
P010	V40 PPI1_PB0		port PB0 input/output	
P011	V40 PPI1_PC0		port PC0 input/output	
P012	V40 PPI1_PA1		port PA1 input/output	
P013	V40 PPI1_PB1		port PB1 input/output	
P014	V40 PPI1_PC1		port PC1 input/output	

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Screen No.	Name of display	Description		Remarks
P015	V40 PPI1_PA2	I/O port IC (Q163)	port PA2 input/output	
P016	V40 PPI1_PB2		port PB2 input/output	
P017	V40 PPI1_PC2		port PC2 input/output	
P018	V40 KEYR-0	key matrix	key return 0	
P019	V40 KEYR-1		key return 1	
P020	V40 KEYR-2		key return 2	
P021	V40 KEYR-3		key return 3	
P022	V40 KEYR-4		key return 4	
P023	V40 KEYR-5		cassette return 0	
P024	V40 KEYR-6		cassette return 1	
P025	V40 KEYR-7		cassette return 2	
P026	V40 KEYR-8		cassette return 3	
P027	87AD SLAVE_A	slave CPU port input/output	port PA input/output	
P028	87AD SLAVE_B		port PB input/output	
P029	87AD SLAVE_C		port PC input/output	
P030	87AD SLAVE_D		port PD input/output	
P031	87AD SLAVE_F		port PF input/output	
P032	V40 OP_IU	reserved.		

■ For details, see the pages that follow.

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Screen No.	bit	Signal	Notation	Jack	Remarks
P000	0	right door open/closed sensor (MS3) signal	RDC	J110-B8	1: door open
	1	manual feed paper sensor (PS11) signal	MFPD	J110-A2	0: paper present
	2	cassette 1 paper sensor (PS9) signal	C1PD	J110-A5	1: paper present
	3	cassette 2 paper sensor (PS10) signal	C2PD	J110-A8	1: paper present
	4	cassette 3 paper sensor (Q600) signal right deck paper sensor (Q751) signal deck paper sensor (Q501) signal	C3PD RPADE PDP	J111-B9	1: paper present
	5	cassette 4 paper sensor (Q601) signal left deck paper sensor (Q752) signal	C4PD LPADE	J111-B11	1: paper present
	6	left feeder assembly paper sensor (Q753) signal deck registration paper sensor (Q502) signal	LPPDE PEP	J111-B12	1: paper present
	7	pedestal side door open/closed sensor (MS581) signal deck side door open/closed sensor (MS703) signal deck open/closed sensor (M503) signal	OPRDC OPEN	J111-B13	1: door open
P001	0	cassette 1 pick-up solenoid (SL4) drive signal	PUSL1	J111-A14	1: SL4 ON
	1	cassette 2 pick-up solenoid (SL4) drive signal	PUSL2	J111-B1	1: SL6 ON
	2	cassette 3 pick-up solenoid (SL581) drive signal right deck paper pick-up release solenoid (SL701) drive signal deke paper pick-up clutch (CL502) drive signal	PUSL3 RPURL PURD	J111-B6	1: SL581 ON SL701 ON CL502 ON
	3	cassette 4 pick-up solenoid (SL582) drive signal left deck paper pick-up release solenoid (SL702) drive signal	PUSL4 RPURL	J111-B10	1: SL582 ON CL702 ON
	4	vertical path roller 1 clutch (CL3) drive signal	FDCL1	J111-A3	1: CL3 ON
	5	vertical path roller 2 clutch (CL4) drive signal	FDCL2	J111-B14	1: CL4 ON
	6	vertical path roller 3 clutch (CL581) drive signal right deck paper pick-up clutch (CL701) drive signal deck registration roller clutch (CL503) drive signal	FDCL3 RPUDR DRGDR	J111-A5	1: CL581 ON CL701 ON CL 503 ON
	7	vertical path roller 4 clutch (CL581) drive signal left deck paper pick-up clutch (CL702) drive signal	FDCL4 LPUDR	J111-B8	1: CL581 ON CL 702 ON
P002	0	manual feed pick-up solenoid (SL5) drive signal	MFSL	J111-A1	1: SL5 ON
	1	cassette pedestal motor (M581) drive signal deck motor (M701, M501) drive signal	PDMD DKMD	J111-B7	1: M581 ON M701 ON M501 ON
	2	lower feeder outlet clutch (CL1) drive signal	RPUCL	J112-A6	1: CL1 ON
	3	separation flapper solenoid (SL7) drive signal	RFSL	J112-A4	1: SL7 ON
	4	feeder fan (FM3) drive signal	FDFM	J112-A9	1: FM3 ON
	5	fixing heater (H1) drive signal	HTRMD	J113-A5	1: heater ON
	6	scanning lamp (LA1) ON signal	LRD	J113-B5	1: lamp ON
	7	hopper motor (M1) drive signal	HMD	J110-B6	1: M1 ON

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Screen No.	bit	Signal	Notation	Jack	Remarks
P003	0	lower feeder outlet paper sensor (PS8) signal	$\overline{\text{LFEXPD}}$	J112-A2	0: paper present
	1	transfer/separation wire cleaner home position sensor (MS6) signal	$\overline{\text{TRCHP}}$	J112-A12	0: at HP
	2	transfer/separation wire cleaner near position sensor (MS8) signal	$\overline{\text{TRCRD}}$	J112-A13	0: at RP
	3	delevery assembly paper sensor (PS6) signal	$\overline{\text{DPD}}$	J113-B2	0: paper present
	4	scanning lamp ON sensor signal	LAON	J110-B3	1: lamp ON
	5	deck pre-registration paper sensor (Q756) signal	$\overline{\text{DRGPD}}$	J111-B4	0: paper present
	6	high-voltage ready signal	HVRDY	—	1: ready
	7	blank CPU ACK	—	—	
P004	0	high-voltage DB 0	HVDB0	—	
	1	high-voltage DB 1	HVDB1	—	
	2	high-voltage DB 2	HVDB2	—	
	3	high-voltage DB 3	HVDB3	—	
	4	high-voltage CTL	HVCTL	—	
	5	blank CPU reset	BLKRST	—	
	6	DPREQ	DPREQ	—	
	7	slave reset	SLVRST	—	
P005	0	cleaning belt drive solenoid (SL2) drive signal	$\overline{\text{CLBSL}}$	J102-A12	1: SL2 ON
	1	AC transformer drive signal	$\overline{\text{HVAC}}$	J102-A11	1: AC transformer ON
	2	primary corona leve control signal	$\overline{\text{HVPR}}$	J105-B4	1: high-voltage output
	3	pre-transfer corona level control signal	$\overline{\text{HVPT}}$	J105-B7	1: high-voltage output
	4	developing AC bias output signal	$\overline{\text{HVBAC}}$	J105-B9	1: AC component ON
	5	black developing assembly lock solenoid (SL3) drive signal	$\overline{\text{DPRSL}}$	J105-A1	1: SL3 ON
	6	registration roller clutch (CL2) drive signal	$\overline{\text{RGCL}}$	J112-B1	1: CL2 ON
	7			J112-B2	

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Screen No.	bit	Signal	Notation	Jack	Remarks
P006	0	copyboard cover open/closed sensor (MS4) signal	$\overline{\text{CBCC}}$	J105-A3	0: cover closed
	1	waste toner sensor (MS1) signal	$\overline{\text{WTOF}}$	J105-B1	0: full
	2	primary corona wire cleaner home position sensor (MS5) signal	$\overline{\text{PRCHP}}$	J109-B10	0: at HP
	3	primary corona wire cleaner rear position sensor (MS7) signal	$\overline{\text{PRCRD}}$	J109-B8	0: at RP
	4	side registration paper sensor (PS1) signal	CRGPD	J109-A11	1: paper edge detected
	5	control card sensor signal	$\overline{\text{CCDT}}$	J108-A15	0: card present
	6	counter sensor	TCNTBD		
	7	DPBUSY	DPBUSY		
P007	0	scanner cooling fan (FM2) drive signal	$\overline{\text{SCFD}}$	J103-B10	1: FM2 ON
	1	main motor (M2) drive signal	MMD		1: M2 ON
	2				
	3				
	4	heat exhaust fan (FM1) drive signal	FMD	J103-A2	1: FM1 ON
	5	scanner motor (PM1) drive signal	SCMD		1: PM1 ON
	6				
	7	watch dog	WTDG	—	
P008	0	scanner position sensor (PS5) signal	SCPD	J102-B5	1: at HP
	1	lens home position sensor (PS4) signal	LGP	J102-B12	1: at HP
	2	lower feeder assembly inlet paper sensor (PS7) signal	$\overline{\text{LFENPD}}$	J102-B2	0: paper present
	3	main motor PLL lock sensor	MLOCK		0: lock
	4	SSR error signal	SRER	J110-B2	1: SSR errer
	5	auto power-off error sensor	$\overline{\text{PWOFF}}$		
	6	for factory only	—	CP10	—
	7	for factory only	—	CP11	—

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Screen No.	bit	Signal	Notation	Jack	Remarks
P009	0	toner color signal 1	CT1	J106-7	red 0 / blue 1 / green 0 / brown 1
	1	toner color signal 2	CT2	J106-5	0 / 0 / 1 / 0
	2	toner color signal 3	CT3	J106-6	0 / 0 / 0 / 0
	3	color toner out signal 1	$\overline{\text{CTEP1}}$	J106-8	0: toner out
	4	color toner out signal 2	$\overline{\text{CTEP2}}$	J106-9	0: toner out
	5	black toner out sensor (TS1) signal	$\overline{\text{BTEP}}$	J109-B5	0: toner out
	6	black developing assembly lock sensor (PS3) signal	BDPRS	J109-B2	1: black developing assembly locked
	7	pre-registration paper sensor (PS2) signal	RGFPD	J109-A8	1: paper present
P010	0	color toner supply solenoid (SL1) drive signal	$\overline{\text{CTSSD}}$	J106-2	1: SL1 ON
	1	color toner lamp ON signal	$\overline{\text{CTLON}}$	J106-10	1: lamp ON
	2	control counter drive signal	$\overline{\text{CCD}}$	J108-B1	1: counter ON
	3	black copy counter drive signal	$\overline{\text{CNT1D}}$	J109-A2	1: counter ON
	4	—			
	5	pre-exposure lamp ON signal	$\overline{\text{PEXP}}$	J109-B13	1: lamp ON
	6	—			
	7	power-off signal	$\overline{\text{PWOFF}}$	J109-A14	1: power OFF
P011	0	primary corona wire cleaner drive signal 1	PRCM1	J109-B12	stop 0 / forward 0 / reverse 1 / brake 1
	1	primary corona wire cleaner drive signal 2	PRCM2	J109-B11	0 / 1 / 0 / 1
	2	transfer/separation corona cleaner drive signal 1	TRCM1	J109-A10	stop 0 / forward 0 / reverse 1 / brake 1
	3	transfer/separation corona wire cleaner drive signal 2	TRCM2	J112-A11	0 / 1 / 0 / 1
	4	left feeder clutch (CL703) drive signal	$\overline{\text{LPPDP}}$	J111-B5	1: CL703 ON
	5	deck registration clutch (CL706) drive signal	$\overline{\text{DRGDR}}$	J111-B3	1: CL706 ON
	6	reserved			
	7	reserved			

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Screen No.	bit	Signal	Notation	Jack	Remarks
P012	0	paper size sensor signal (cassette and deck)	SIZE0	J112-B14, J111-A6	
	1		SIZE1	J112-B13, J111-A7	
	2		SIZE2	J112-B12, J111-A8	
	3		SIZE3	J112-B11, J111-A9	
	4	option connect signal	CNCT	J111-A10	
	5	reserved			
	6	reserved			
	7	service mode switch sensor signal	SRV	J109-A6	1 : Switch ON
P013	0	oscillation signal 0	DIGIT0	J112-B9	
	1	oscillation signal 1	DIGIT1	J112-B10	
	2	oscillation signal 2	DIGIT2	J111-A11, J111-A13	
	3	oscillation signal 3	DIGIT3	J111-A12, J109-A6	
	4	oscillation signal 4	DIGIT4	—	
	5	oscillation signal 5	DIGIT5	—	
	6	oscillation signal 6	DIGIT6	—	
	7	reserved			
P014	0	ON signal 0	LDATA0	J108-A11	causes LED on control panel to go ON
	1	ON signal 1	LDATA1	J108-B5	
	2	ON signal 2	LDATA2	J108-A12	
	3	ON signal 3	LDATA3	J108-B4	
	4	ON signal 4	LDATA4	J108-A13	
	5	ON signal 5	LDATA5	J108-B3	
	6	ON signal 6	LDATA6	J108-A14	
	7	ON signal 7	LDATA7	J108-B2	

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Screen No.	bit	Signal	Notation	Jack	Remarks
P015	0	key read-in signal 8	RETURN8	J108-A7	reads key input
	1	key read-in signal 9	RETURN9	J108-B9	
	2	key read-in signal A	RETURNA	J108-A8	
	3	key read-in signal B	RETURNB	J108-B8	
	4	key read-in signal C	RETURNC	J108-A9	
	5	key read-in signal D	RETURND	J108-B7	
	6	key read-in signal E	RETURNE	J108-A10	
	7	key read-in signal F	RETURNF	J108-B6	
P016	0	control panel control signal 0	DBB0	J107-10	controls LCD
	1	control panel control signal 1	DBB1	J107-9	
	2	control panel control signal 2	DBB2	J107-8	
	3	control panel control signal 3	DBB3	J107-7	
	4	control panel control signal 4	DBB4	J107-6	
	5	control panel control signal 5	DBB5	J107-5	
	6	control panel control signal 6	DBB6	J107-4	
	7	control panel control signal 7	DBB7	J107-3	
P017	0	LCD enable signal	E	J107-12	
	1	LCD resistor select signal	RS	J107-14	
	2	LCD backlight signal	BACKLIGHT	J108-B10	
	3	reserved			
	4	blank command 0	—	—	
	5	blank command 1	—	—	
	6	blank command 2	—	—	
	7	blank CPU request	—	—	

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Screen No.	bit	Signal	Notation	Jack	Remarks
P018	0	numeric key [0]			1: key ON
	1	numeric key [1]			1: key ON
	2	numeric key [2]			1: key ON
	3	numeric key [3]			1: key ON
	4	numeric key [4]			1: key ON
	5	numeric key [5]			1: key ON
	6	numeric key [6]			1: key ON
	7	numeric key [7]			1: key ON
P019	0	numeric key [8]			1: key ON
	1	numeric key [9]			1: key ON
	2	[C / ⊘] key			1: key ON
	3	[◇] key			1: key ON
	4	[″] key			1: key ON
	5	[CASSETTE] key			1: key ON
	6	COPY DENSITY [darker] key			1: key ON
	7	AE key [A]			1: key ON
P020	0	COPY DENSITY [lighter] key			1: key ON
	1	[REDUCE] key			1: key ON
	2	[DIRECT] key			1: key ON
	3	[ENLARGE] key			1: key ON
	4	INTERRUPT key			1: key ON
	5	[COLOR] key			1: key ON
	6	[✳] key			1: key ON
	7	PRE-HEAT key			1: key ON

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Screen No.	bit	Signal	Notation	Jack	Remarks
P021	0	SEPARATE key			1: key ON
	1	TWO-SIDED key			1: key ON
	2	OVERLAY key			1: key ON
	3	BIND key			1: key ON
	4	FRAME ERASE Key			1: key ON
	5	AUTO REPRO key			1: key ON
	6	ZOOM key -			1: key ON
	7	ZOOM key +			1: key ON
P022	0	MODE MEMO key M1			1: key ON
	1	MODE MEMO key M2			1: key ON
	2	MODE MEMO key M3			1: key ON
	3	SORT key			1: key ON
	4	FOLD key			1: key ON
	5	AREA key			1: key ON
	6	ID key			1: key ON
	7	—			
P023	0	cassette 1 size sensor switch 0			1: Switch ON
	1	cassette 1 size sensor switch 1			1: Switch ON
	2	cassette 1 size sensor switch 2			1: Switch ON
	3	cassette 1 size sensor switch 3			1: Switch ON
	4	—			
	5	—			
	6	—			
	7	—			

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Screen No.	bit	Signal	Notation	Jack	Remarks
P024	0	cassette 2 size sensor switch 0			1 : switch ON
	1	cassette 2 size sensor switch 1			1 : switch ON
	2	cassette 2 size sensor switch 2			1 : switch ON
	3	cassette 2 size sensor switch 3			1 : switch ON
	4	—			
	5	—			
	6	—			
	7	—			
P025	0	cassette 3 size sensor switch 0			1 : switch ON
	1	cassette 3 size sensor switch 1			1 : switch ON
	2	cassette 3 size sensor switch 2			1 : switch ON
	3	cassette 3 size sensor switch 3			1 : switch ON
	4	—			
	5	—			
	6	—			
	7	—			
P026	0	cassette 4 size sensor switch 0			1 : switch ON
	1	cassette 4 size sensor switch 1			1 : switch ON
	2	cassette 4 size sensor switch 2			1 : switch ON
	3	cassette 4 size sensor switch 3			1 : switch ON
	4	—			
	5	—			
	6	—			
	7	—			

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Screen No.	bit	Signal	Notation	Jack	Remarks
P027	0	scanner motor (PM1) control signal1	$\overline{SCT1}$	J103-A4	
	1	scanner motor (PM1) control signal2	$\overline{SCT2}$	J103-B9	
	2	scanner motor (PM1) control signal3	$\overline{SCT3}$	J103-A5	
	3	scanner motor (PM1) control signal4	$\overline{SCT4}$	J103-B8	
	4	scanner motor (PM1) control signal5	$\overline{SCT5}$	J103-A6	
	5	lower feeder outlet paper sensor (PS8) signal	$\overline{LFEXPD}$	J112-A2	0 : paper presennt
	6	lens home position sensor (PS4) signal	$\overline{LHP}$	J103-B12	1 : at HP
	7	side registration paper edge sensor (PS1) signal	$\overline{CRGPD}$	J103-A11	1 : paper edge detected
P028	0	scanner motor (PM1) control signal6	$\overline{SCT6}$	J103-B7	
	1	scanner motor (PM1) control signal7	$\overline{SCT7}$	J103-A7	
	2	scanner motor (PM1) control signal8	$\overline{SCT8}$	J103-B6	
	3	scanner motor (PM1) control signal9	$\overline{SCT9}$	J103-A8	
	4	scanner motor (PM1) control signal10	$\overline{SCT10}$	J103-B5	
	5	scanner motor (PM1) drive signal	$\overline{SCWON}$	J103-B4	1 : PM1 ON
	6	—	$\overline{SCEXOFF}$		
	7	scanner position sensor (PM5) signal	$\overline{SCPD}$	J102-B5	1 : at HP
P029	0	lens motor (PM2) power supply switching signal	$\overline{LNSTB}$	J104-A6 J104-A3	0 : 5V,1: 24V
	1	side registration motor (PS4) signal power supply switch signal	$\overline{CRGSTB}$	J102-A10 J102-A7	0 : 5V,1: 24V
	2	DPBUSY	$\overline{DPBUSY}$		
	3	DPREQ	DPREQ		
	4	image leading edge	SCDPO	—	
	5	scanner motor (PM1) current level switching signal	SCPWDWN	J103-A9	1 : low
	6	—			
	7	separation flapper solenoid (SL7) drive signal	$\overline{RFSL}$	J112-A4	1 : SL7 ON

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Screen No.	bit	Signal	Notation	Jack	Remarks
P030	0	delivery motor (PM3) drive signal	DFA	J113-B4	alternates between '1' and '0' while PM3 is rotating
	1		$\overline{\text{DFA}}$	J113-B5	
	2		DFB	J113-B7	
	3		$\overline{\text{DFB}}$	J113-B8	
	4	set-back roller drive motor (PM5) drive signal	LFA	J112-B3	alternates between '1' and '0' while PM5 is rotating
	5		$\overline{\text{LFA}}$	J112-B4	
	6		LFB	J112-B6	
	7		$\overline{\text{LFB}}$	J112-B7	
P031	0	lens motor (PM2) drive signal	LNA	J104-A1	alternates between '1' and '0' while PM2 is rotating
	1		$\overline{\text{LNA}}$	J104-A2	
	2		LNB	J104-A4	
	3		$\overline{\text{LNB}}$	J104-A5	
	4	side registration motor (PM4) drive signal	CRGA	J105-A5	alternates between '1' and '0' while PM4 is rotating
	5		$\overline{\text{CRGA}}$	J105-A6	
	6		CRGB	J105-A8	
	7		$\overline{\text{CRGB}}$	J105-A9	

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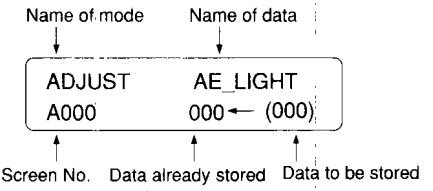
F. Adjustment Mode (☒3☒)

- Select the desired screen using the COPY DENSITY key.
- Enter the setting using the numeric keypad; to fine tune the setting, use the ENLARGE key for an increase, and the REDUCE key for a decrease.
- Press the ☒ key to store the setting; the setting, however, cannot exceed the specified range.



Screen No.	Item	Adjustment	Range	Remarks
A000	AE_LIGHT	intensity for AE measurement	0 to 999	when decreased, copies in the AE mode will be lighter.
A001	REGIST	leading edge margin (registration roller ON timing)	0 to 999	when increased, the resistration roller ON timing will be delayed; unit, 0.18 mm.
A002	LE_BLANK	leading edge non-image width	0 to 999	when increased, the leading edge margin will be increased; unit, 0.1 mm.
A003	LIGHT_5	intensity at copy density 5 (effective for both manual and AE)	0 to 999	when increased, the copy density will lower; unit, 0.1 V.
A004	LIGHT_1	slope at copy density 6 or lower	0 to 999	when increased, the intensity of the scanning lamp will decrease at copy density 1.
A005	LIGHT_9	slope at copy density 6 or higher	0 to 999	when increased, the intensity of the scanning lamp will increase at copy density 9.
A006	BIAS_9	developing bias (DC component; black copy)	0 to 999	when decreased, the bias will decrease (approching 0) and the copy density will increase; unit, 1 V.
A007	BIAS_C	developing bias (DC component; color copy)		

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Screen No.	Item	Adjustment	Range	Remarks
A008	TRN_1	transfer current	0 to 999	when decreased, the current will decrease; unit, 1 μA.
A009	TRN_2	transfer current (2nd side of overlay/ two-sided copy)		
A010	SEP_1	separation current	0 to 999	when increased, the current will increase; unit, 1 μA.
A011	SEP_2	separation current (2nd side of overlay/ two-sided copy)		
A012	AE_SLOP	AE slope	0 to 999	when increased, copies of a newspaper will be lighter.
A013	BIAS_BL	Developing bias relative difference (DC component; color)	0 to 999	set the relative difference in respect of BIAS_C (red): center, 100; unit, 1 V.
A014	BIAS_G			
A015	BIAS_BR			
A016	GRID	Grid bias	0 to 999	when decreased, the bias will increase; unit, 1 V.
A017	DOC_STOP	document stop position (with RDF in use)	0 to 999	see next page.

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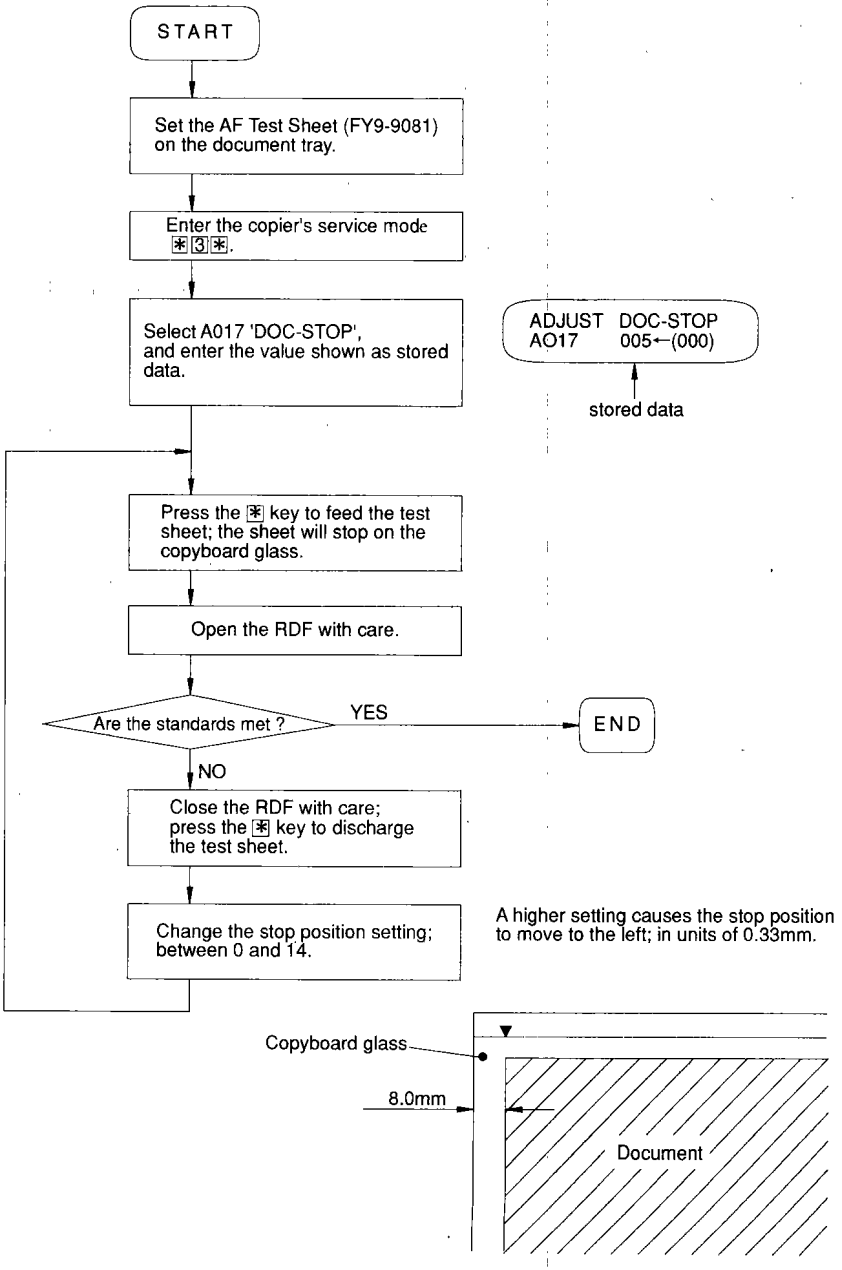
[Adjusting document stop position]


START
Set the AF Test Sheet (FY9-9081) on the document tray.
Enter the copier's service mode ✱3✱.
Select A017 'DOC-STOP', and enter the value shown as stored data.
ADJUST DOC-STOP
A017 005←(000)
stored data
Press the ✱ key to feed the test sheet; the sheet will stop on the copyboard glass.
Open the RDF with care.
Are the standards met ?
YES
END
NO
Close the RDF with care; press the ✱ key to discharge the test sheet.
Change the stop position setting; between 0 and 14.
A higher setting causes the stop position to move to the left; in units of 0.33mm.
Copyboard glass
8.0mm
Document

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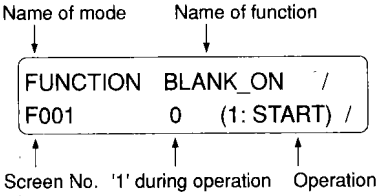
G. Function/Inspection Mode (✳4✳)

- Select the desired screen using the COPY DENSITY key.
- Press the ✳ key to start operations; be sure to execute each item during standby only.



Screen No.	Name of display	Description	Remarks
F001	BLANK_ON	checks if the blank exposure lamp goes ON.	remains ON for 30 sec.
F002	SB_MTR	checks the operation of the set-back roller drive motor.	remains ON for 30 sec
F003	SRG_MTR	checks the operation of the horizontal registration motor.	executes initial operation
F004	HPPR_MTR	checks the operation of the hopper motor.	remains ON for 5 sec.
F005	SCAN_MTR	checks the operation of the scanner motor.	executes initial operation
F006	DEV_REL	disengages the black developing assembly/engages the CD unit.	
F007	CD_SET	executes idle rotation of CD unit (installation).	DO NOT execute it except during installation work.
F008	AE_ADJ	adjusts the AE scanning intensity	See "Standards and Adjustments"
F009	ERROR	clears E000, E001, E002, E003 and E004	
F010	RAM_INIT	initializes the RAM data.	executes the item only when replacing the DC controller; after replacement , enter the settings shown on the label (✳3✳, etc.). The execution initializes all copy count memory stored in the DC controller.

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Screen No.	Name of display	Description	Remarks
F011	DIPS_LED	checks that the cotrol panel LEDs go ON.	remains ON for 10 sec.
F012	CD_SL	checks the operation of the color toner supply solenoid.	solenoid remains ON for 0.5 sec
F013	SEP_SL	checks the operation of the separation flapper solenoid.	solenoid remains ON for 0.5 sec.
F014 through F030		not used.	
F031	TONER S	black toner supply (installation)	Do not use except during installation.

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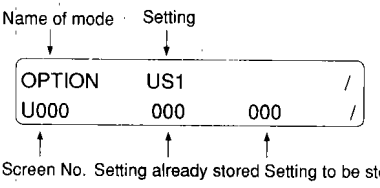
H. Settings Mode (⊛5⊛)

- Select the desired screen using the COPY DENSITY key.
- Enter the setting using the numeric keypad; to fine tune the setting, use the ENLARGE key for an increase, and the REDUCE key for a decrease.
- Press the ⊛ key to store the setting.



Screen No.	Item	Function	Description	Remarks
U000	US1	stores the size of the universal cassette	stores the size of the paper placed in the universal cassette; see the next page for the setting.	enables the use of auto reproduction ratio selection.
U001	US2			
U002	UL1			
U003	UL2			
U004	AE_SLCT	sets the standard modes	1: AE enabled 0: AE disabled	all numerals except '0' will be assumed to represent '1'.
U005	CST_SLCT		0: auto cassette selected 1: cassette 1 selected 2: cassette 2 selected 3: cassette 3 selected 4: cassette 4 selected	all numerals higher than '5' will be assumed to represent '0'.
U006	AUTO_CAS	enables or disables auto cassette change	With the function ON, when the selected cassette runs out of paper, copying will continue by automatically switching to another cassette containing paper of the same size. 0: auto cassette change disabled 1: auto cassette change enabled	all numerals except '0' will be assumed to represent '1'.

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Screen No.	Item	Function	Description	Remarks
U007	SHUT_OFF	sets the auto shut-off time	The auto shut-off time may be set between 1and 24 hours in 1 hour increments; if set to '0', the function will be disabled.	standard: 2 hrs.
U008	MSG_OFF	enable or disables messages	The messages issued for auto reproduction ratio/auto cassette change functions may be enabled or disabled. 1: enabled 0: disabled	all numerals except '0' will be assumed to represent '1'.
U009	DENS_IND	changes copy density notations	The normal 9-step notation for the copy density may be expressed in 17-step notation. 0: 9-step 1: 17-step	all numerals except '0' will be assumed to represent '1'.
U010	WARM_UP	switches the wait time*	0: warm-up ends when fixing temperature is 145℃. 1: warm-up ends when fixing temperature is 175℃.	all numerals except '0' are considered to be '1'.

*If fixing faults occur on copies made immediately after power-on, to '175℃.

<Table of Setting for the Universal Cassette>

<US1/US2>

Paper size	Setting
GOVERNMENT LTR	001
GOVERNMENT LTR-R	002
KOREAN GOVERNMENT	003
KOREAN GOVERNMENT-R	004
ARGENTINE LTR	005
ARGENTINE LTR-R	006

<UL1/UL2>

Paper size	Setting
GOVERNMENT LGL	007
ARGENTINE LGL	008
FOLIO	009
FOOLSCAP	010
AUSTRALIAN FOOLSCAP	011
OFICIO	012
EQUADORAN OFICIO	013
BOLIVIAN OFICIO	014

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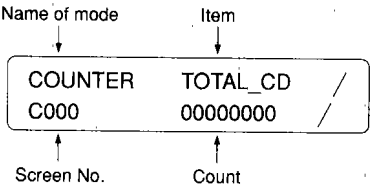
I. Counter Mode (✳6✳)

- Select the desired screen using the COPY DENSITY key.
- To clear the counter, select the item first; then, press the service mode switch and the CLEAR/STOP key at the same time.



Screen No.	Item	Description	Maximum digit
C000	TOTAL_CD	color copy counter reading	999999 (thereafter, returns to '000000')
C001	RED	red copy counter reading	
C002	BLUE	blue copy counter reading	
C003	GREEN	green copy counter reading	
C004	BROWN	brown copy counter reading	
C005	WEB	No. of cleaning belt drive solenoid operations	
C006	MANUAL	No. of manual feed pick-ups	
C007	CST_1	No. of cassette 1 pick-ups	
C008	CST_2	No. of cassette 2 pick-ups	
C009	CST_3	No. of cassette 3/right deck pick-ups	
C010	CST_4	No. of cassette 4/left deck pick-ups	
C011	—	—	
C012	DUPLEX	No. of pick-ups from lower feeder assembly for two-sided copies	

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XI. SELF DIAGNOSIS

The machine is equipped with a self diagnostic function; the microprocessor in the DC controller checks the sensors and the machine's general condition and, if an error is found, indicates a code on the message display of the control panel.

Code	Cause	Description
E000	• Thermistor (TH1; faulty contact, open circuit) • Fixing heater (H1; open circuit) • Thermoswitch (SW4; malfunction) • SSR (faulty) • DC controller (faulty)	The output of TH1 does not reach 100°C within 140 sec after power-on; see notes i. and ii.
E001	• Thermister (TH1; short circuit) • SSR (faulty) • DC controller (faulty)	The output of TH1 exceeds 200°C for 1 sec; see notes i. and ii.
E002	• Thermistor (TH1; faulty contact, open circuit) • Fixing heater (H1; open circuit) • Thermoswitch (SW4; malfunction) • SSR (faulty) • DC controller (faulty)	• The output of TH1 does not reaches 170°C within 100 sec after it has reached 100°C . • The output of TH1 does not reaches 175°C after it has reached 170°C.
E003		• The output of TH1 drops to 150°C or less after it has reached 175°C ; see notes i. and ii.
E004	• SSR (short circuit) • Lamp regulator (faulty) • DC controller (faulty)	• A short circuit is detected in the SSR while the heater isOFF immediately after power-on (2 sec). • A short circuit is detected in the SSR for more than 2 sec while the heater is OFF.
E010	• Main motor (M2; faulty) • Motor drive (faulty) • DC controller (faulty)	M2 has rotated at a speed not specified for 1 sec or more after the main motor drive signal has been generated.

*E002 conditions are identified as follows if the warm-up time is changed to 145°C

- The output of TH1 does not reach 140°C within 100 sec after it has reached 100°C.
- The output of TH1 does not reach 175°C within 70 sec after it has reached 145°C.
- The output of TH1 does not reach 175°C within 100 sec after it has reached 160°C.

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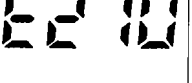
Code	Cause	Description
	• Black developing assembly engagement sensor (PS3; faulty) • Black developing assembly engagement solenoid (SL3; faulty) • DC controller (faulty)	The CD unit remains engaged for 1.6 sec or more after the black developing assembly has been disengaged; the output of the developing assembly engagement sensor (PS3) is '0'. The black developing assembly remains engaged for 1.6 sec or more afterr the CD unit has been selected; PS3=1.
	• Counter (CNT1; open circuit) • DC controller (faulty)	Checks are made immediately before the counter goes ON or OFF; normal if the counter drive signal is '0' when the counter goes ON or if the counter drive signal is '1' when the counter goes OFF.
	• Scanner motor (PM1; faulty) • Scanner position sensor (PS5; faulty) • DC controller (faulty)	The scanner initial operation is not over within 10 sec after power-on; if any of the following, no code is indicated, but the keys on the control panel will be locked. • The AE reverse movement is not over within 3 sec. • The reverse movement after exposure is not over within 5 sec.
	• Scanner motor (PM1; faulty) • Scanner position sensor (PS5; faulty) • DC controller (faulty)	The AE forward movement is not over within 3 sec. The forward movement after exposure is not over within 5 sec.
	• Lens home position sensor (PS4; faulty) • Lens motor (PM2; faulty) • Lens wire (faulty) • DC controller (faulty)	The operation by which the lens is set to the DIRECT position after the initial rotation has started took 20 sec or more. The operation by which the lens is set to the selected reproduction ratio after the COPY START key has been pressed took 15 sec or more.

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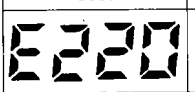
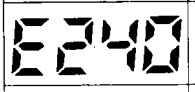
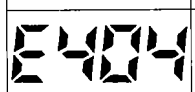
Code	Cause	Description
	• Scanning lamp (LA1; faulty)	At the lamp ON timing, LAON=1 is not true. At the lamp OFF timing, LAON=0 is not true.
	• DC controller (faulty)	An error is found in communication between the master CPU and the slave CPU.
	• Data communication (faulty)	See the RDF SERVICE MANUAL.
	• Pick-up motor (rotation faulty) • Pick-up roller sensor (faulty)	
	• Belt feeder motor (movement faulty) • Belt feeder motor clock sensor (faulty)	
	• Feeder motor (faulty) • Feeder motor clock sensor (faulty)	
	• Delivery motor (faulty rotation) • Delivery motor clock sensor (faulty)	
	• Document sensor (faulty) • Registration paper sensor (faulty) • Last document trailing edge sensor (faulty) • Pre-registration sensor (faulty)	

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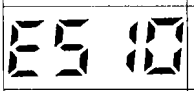
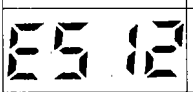
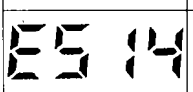
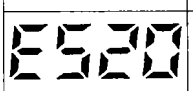
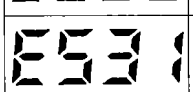
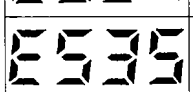
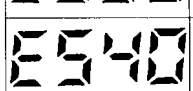
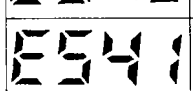
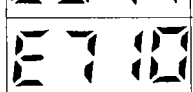
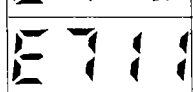
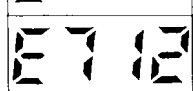
Code	Cause	Description
	• Data communication (faulty)	See the SORTER SERVICE MANUAL.
	• Feeder motor (faulty)	
	• No. 1 delivery motor (faulty)	
	• No. 2 delivery motor (faulty)	
	• Stacker motor (faulty)	
	• Guide vibrator motor (faulty)	
	• Stapler unit drive motor (faulty)	
	• Vibrator unit drive motor (faulty)	
	• Shift motor (faulty rotation)	
	• Shift motor (faulty rotation, slow)	
	• DC controller (faulty)	The IPC cannot be initialized when the machine is switched ON.
	• DC controller (faulty)	An IPC communication error is detected twice or more within 1 sec.
	• DC controller (faulty) • DFcontroller (faulty) • DFcable (faulty)	The communication error, if any, with the DF cannot be cleared.
	• Auto shut-off relay (open circuit)	• An open circuit is identified for 1 sec or more.

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Note:

i. If an error has occurred, the machine may be reset by switching it OFF once and then ON. This does not apply to E000, E001, E002, E003, or E004.
To reset the machine, execute 'ERROR' in the service mode (▣4▣), this consideration is made to prevent the user from carelessly resetting the machine without realizing possible faults in the thermistor, causing the fixing rollers to overheat and become damaged.

ii. E000, E001, E002, E003 or E004 are displayed upon detection of respective errors without delay.

iii. When the machine is switched OFF and then ON in response to an error in the 400's, self diagnosis will be executed once again, and the message 'Feeder at Fault' will be indicated; copies may still be made if the feeder is not used.

iv. When the machine is switched OFF and then ON in response to an error in the 500's except 'E500', self diagnosis will be executed once again, and the message 'Sorter at Fault' will be indicated; copies may still be made by detaching the sorter (sliding it to the left holding the grip).

v. E202 and E204 may be checked under 'BERR' in the service mode (▣1▣).

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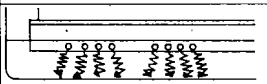
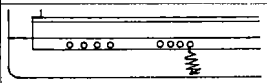
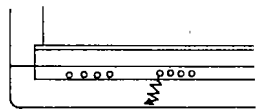
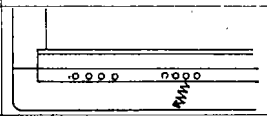
Image Editing Unit

The editor is equipped with a self diagnostic mechanism that, upon detection of an error, flashes LEDs to indicate the type of the error.

	Pattern	Cause	Description
1		· Harness (open circuit, disconnection) · Editor controller (faulty)	at power-on
2		· Cable (between plane-shaped resistor and editor controller; open circuit, disconnection)	at power-on
3		· Plain-shaped resistor (short circuit; more than specific pressure is imposed on editor input face at time of power-on)	at power-on
4		· Data communication (error)	at all times; communication absent 200 ms or more

The LEDs are flashed ON and OFF at intervals of 1 sec.
The machine may be reset by turning it OFF and then ON if for patterns 1 and 4.
The machine will be reset upon removal of the cause if for patterns 2 and 3.

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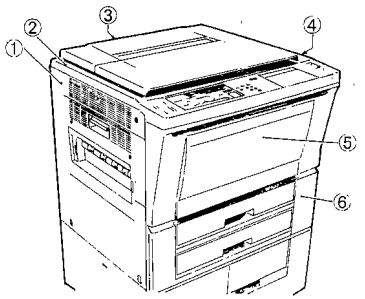
I. EXTERNALS

A. External Covers



① Left cover (10)
② Upper cover (4)
③ Rear cover (8)
④ Right cover (7)
⑤ Front door
⑥ Lower front cover (3)

Note:
The numbers in parentheses indicate the number of mounting screws used.

Figure 4-100

Detach the covers as necessary for cleaning, inspecting, or repairing the inside of the machine.

Covers that can be detached by mere removal of the screws are left out of the procedure.

1. Upper Cover

1) Detach the copyboard cover.
2) Detach the control panel; see p. 4-3.
3) Detach the rear cover.
4) Remove the two mounting screws, and detach the copyboard glass retainer.
5) Detach the copyboard glass.
6) Remove the mounting screw, and detach the magnet plate.
7) Hold the tabs under the bushing (left, right) for the copyboard cover, and push it up to detach.
8) Remove the two mounting screws, and detach the upper cover.

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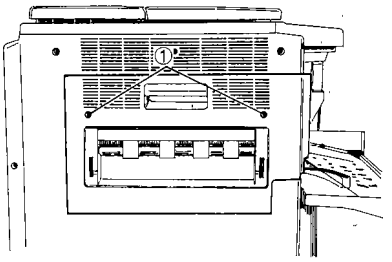
2. Left Cover

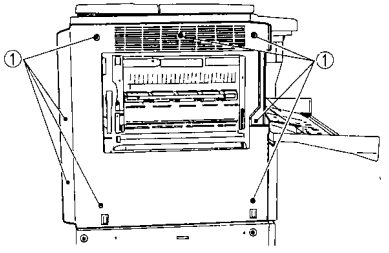
1) Open the front door.
2) Remove the two screws, and detach the delivery cover.



① Screws

Figure 4-101

3) Remove the eight screws, and detach the left cover.

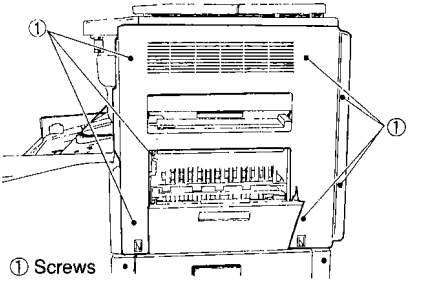


① Screws

Figure 4-102

3. Right Cover

1) Remove the seven screws, and detach the right cover.



① Screws

Figure 4-103

4. Rear Cover

1) Loosen the two screws that hold the base plate until they are about to come off.
2) Remove the four screws (left, right).
3) Remove the two screws on the top.
4) Remove the rear cover.

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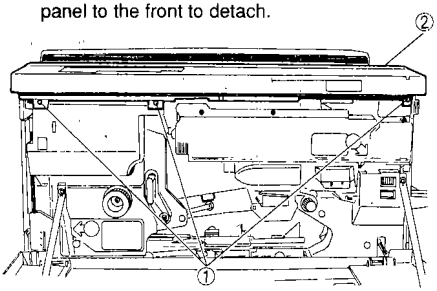
B. Control Panel

1. Detaching the Control Panel

1) Open the front door.
2) Remove the three screws, and detach the grounding cord; then, slide up the control panel to the front to detach.



① Screws ② Control panel

Figure 4-104

C. Copyboard Cover

1. Replacing the Copyboard Sheet

The copyboard sheet is attached to the copyboard retainer plate using adhesive tape; pull its corners to detach it.

After replacement, push down on the copyboard sheet to ensure good adhesion.

D. Fans

1. Outline

The machine is equipped with three fan motors to prevent overheating by circulating the air inside the machine.

Each of the fans serves the following functions:

heat exhaust fan (FM1): discharges the heat from the fixing assembly to the outside of the machine.
scanner cooling fan (FM2): cools the scanner.
feeder fan (FM3): provides suction to the underside of the copypaper on the feeder.

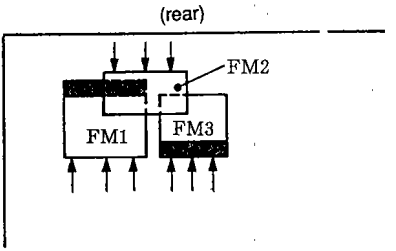


Figure 4-105 (top view)

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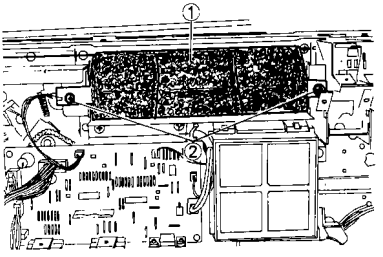
2. Detaching the Scanner Cooling Fan (FM2)/Filter

Note:

Make sure that the screwdriver is a magnetic type.

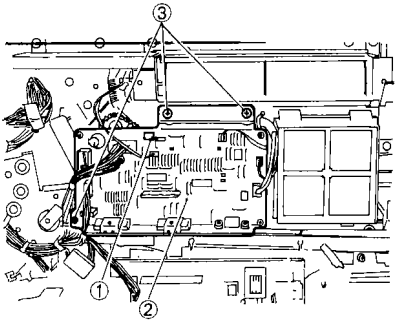
1) Detach the rear cover.
2) Detach the upper cover.
3) Remove the two mounting screws to detach the filter.



① Filter ② Mounting screws

Figure 4-106

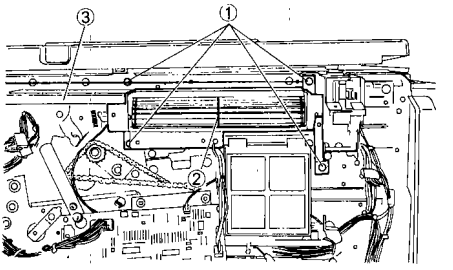
3) Disconnect the connector (J606), and remove the three mounting screws used to hold the motor driver.



① J606 ③ Mounting screws
② Motor driver

Figure 4-107

4) Detach the protection cover; then, remove the four mounting screws, and detach the scanner cooling fan.

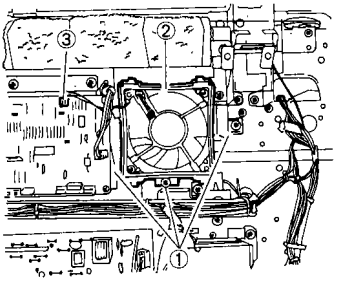


① Mounting screws ③ Protection cover
② Scanner cooling fan

Figure 4-108

3. Detaching the Heat Exhaust Fan (FM1) Ozone Filter

1) Detach the rear cover.
2) Detach the ozone filter.
3) Remove the three screws, and disconnect the connector (J604); then, detach the heat exhaust fan.



① Mounting screws ③ J604
② Heat exhaust fan

Figure 4-109

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4. Detaching the Feeder Fan (FM3) / Ozone Filter

For detachment of the ozone filter, see "Other Drive Assemblies"; for the feeder fan, see "Detaching the Feeder Assembly."

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II. DRIVE SYSTEM

A. Lens Drive Assembly

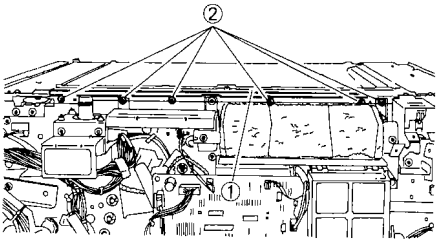
1. Outline

The lens drive assembly moves the position of the zoom lens using the drive of the lens motor (M3) transmitted by the lens drive cable.

2. Disassembly and Assembly

a. Detaching the Lens Motor

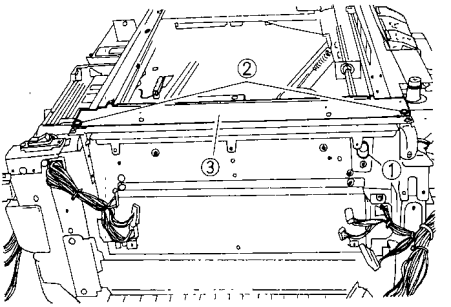
1) Detach the upper cover, rear cover, and copyboard cover switch mount.
2) Remove the six screws, and detach the harness retainer.



① Harness retainer ② Mounting screws

Figure 4-200

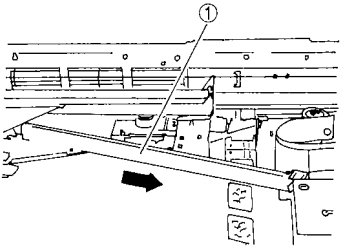
3) Detach the mirror drive cable found on the right side of the machine.
4) Remove the five screws, and detach the DC controller.
5) Remove the screw, and detach the rail support plate; and, remove the two screws, and detach the upper right stay.



① Support plate ③ Upper right stay
② Screws

Figure 4-201

6) Remove the four screws, and detach the upper left stay.
7) Remove the four screws, and detach the lens cover.
8) Move the lens unit in the direction of the arrow shown to free the left side of the rail.



① Scanner rail

Figure 4-202

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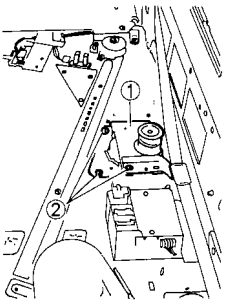
9) Detach the mirror unit together with the rail.
10) Remove the three mounting screws, and detach the lens motor.



① Lens motor ② Screws

Figure 4-203

Note:
The scanner is adjusted at the factory with high precision using special tools.
Do not detach parts that are not shown in the Parts Catalog.

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b. Routing the Lens Drive Cable

1) Detach the scanner unit; see the steps given for its detachment. Route the lens drive cable in the order given in Figure 4-204.

Note:

Wind the cable four times around the pulley ③ so that the cable is at the top on the pulley ④.

2) Hook a spring gauge between the pulley and the lens motor and pull it about 10 mm; slide the pulley to the direction of A and fix it in place when the reading of the gauge is between 400 and 450 g.

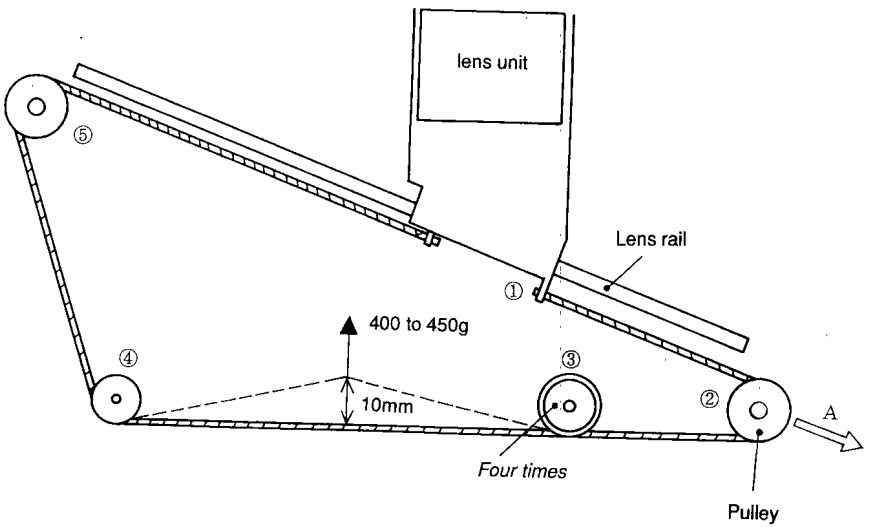

Figure 4-204

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B. Scanner Drive Assembly

1. Routing the Mirror Drive Cable

1) Loosen the two fixing screws shown in Figure 4-205.
2) Turn the adjusting screw to move the pulley③ to the right.
3) Move the No. 1 and No. 2 mirror mounts fully to the front.
4) Route the cable with the numbered order provided in Figure 4-205.
   - at number ②, lead the cable at the bottom of the pulley.
   - at number ④, wind the cable five times clockwise from bottom to top.
   - at number ⑥, lead cable at the top of the pulley.
5) Adjust the tension of the cable; see "Adjusting the Tension of the Mirror cable."
6) Adjust the position of the mirror; see "Adjusting the Position of the Mirror."

Note:

Make sure the cable is not twisted.

2. Adjusting the Tension of the Mirror Drive Cable

To adjust the tension of the mirror drive cable, loosen the fixing screw, and turn the adjusting screw to change the position of the pulley ③.

Set the No.1 mirror mount on the home position side, and pull a point between ① and ② with a spring gauge; Figure 4-205. Make adjustments so that the reading of the gauge is 800 to 900 g when the cable is pulled to the front of the machine by 20 mm.

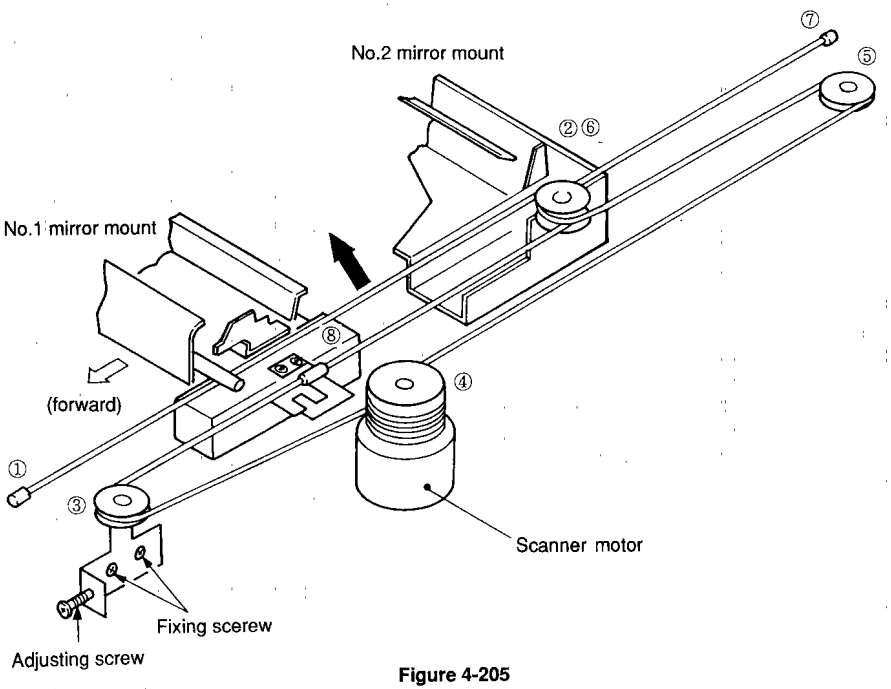

Figure 4-205

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3. Adjusting the Position of the Mirror (optical distance between No. 1 and No. 2 Mirrors)

Adjust the position of the mirror when the mirror drive cable has been replaced.

To adjust it, change the position of the metal fixing of the No. 1 mirror mount.

Note:

The cable tends to stretch as copies are made, requiring adjustment.

1) Draw lines 1 cm from both sides of a sheet of copy paper (A4 or Letter).

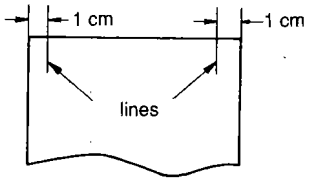

Figure 4-206

2) Place the sheet on the copyboard, and make a copy; call the copy *sheet* A.
3) Place a blank sheet of paper on the copyboard, and feed the original sheet in the manual mode; call the original sheet *sheet* B.
   - When the original sheet has gone through the machine, it shows contraction by heat.
4) Put *sheet* A and *sheet* B together, and reposition the No. 1 mirror mount so that distances x and y (Figure 4-207) will be the same.

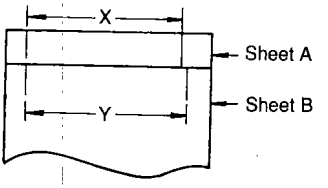

Figure 4-207

x=y: correct
x>y: move the No. 1 mirror mount in the direction of ⓐ.
x<y: move the No. 1 mirror mount in the direction of ⓑ.

Note:

If the distance between the No. 1 mirror and the No. 2 mirror is short, the copy image will be enlarged; if long, reduced.

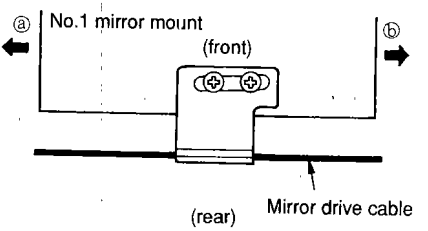

Figure 4-208 (top view)

4. Lubrication

Clean the scanner rail, and apply lubricant evenly along it.

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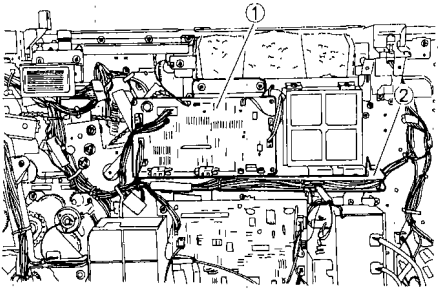
C. Main Motor Assembly

1. Detaching the Main Motor Assembly

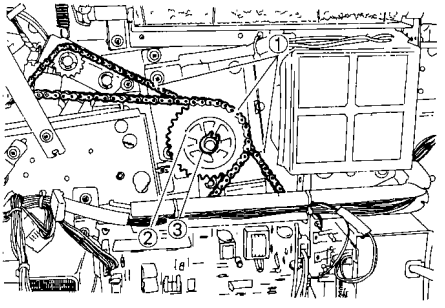
1) Detach the rear cover.
2) Disconnect the seven connectors, and detach the motor driver.
3) Move the harness guide upward to detach.



① Motor driver unit
② Harness guide

Figure 4-209

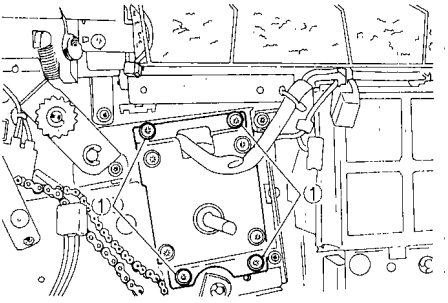
4) Remove the grip stop ring, and detach the three main motor gears and the three chains.



① Chain
② Main motor gear
③ Grip stop ring

Figure 4-210

5) Remove the four mounting screws, and detach the main motor.



① Mounting screws

Figure 4-211

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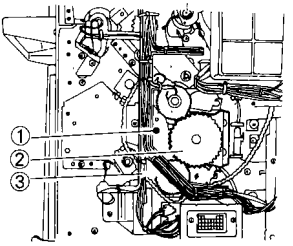
D. Pick-Up Drive Assembly

1. Detaching the Pick-Up Drive Assembly

1) Detach the rear cover.
2) Disengage the chain from the pick-up drive gear.
3) Remove the screw that holds the harness retainer.
4) Remove the three screws, and detach the pick-up drive assembly.

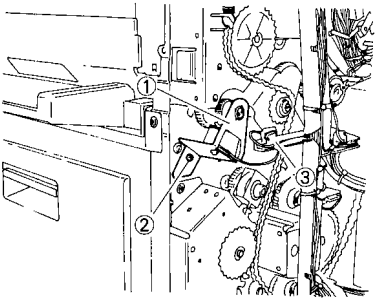


① Screws
② Pick-up drive assembly
③ Harness retainer

Figure 4-212

2. Detaching the Manual Feed Pick-Up Drive Assembly

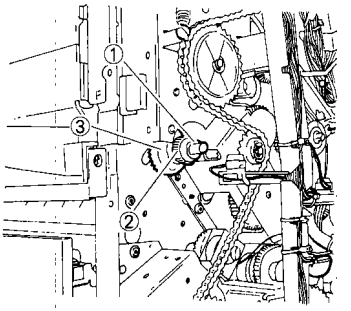
1) Detach the rear cover.
2) Remove the screw, and disconnect the connector; then, detach the manual feed pick-up solenoid.



① Manual feed pick-up solenoid
② Screw
③ Connector

Figure 4-213

3) Remove the E-ring and the hex screw; then, detach the spring clutch.



① E-ring
② Hex screw
③ Spring clutch

Figure 4-214

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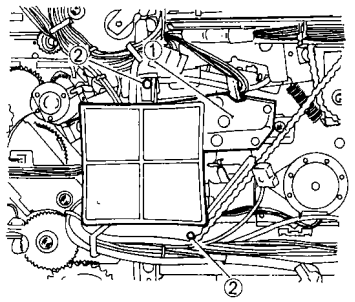
E. Registration Roller Drive Assembly

1. Detaching the Registration Roller Clutch,Registration Drive Assembly and Horizontal Registration Drive Assembly

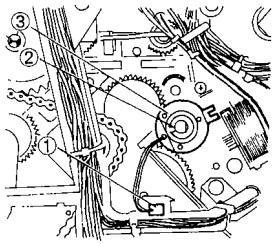
1) Detach the rear cover.
2) Detach the high-voltage power supply.
3) Remove the two screws, and detach the air duct.



① Air duct ② Screws

Figure 4-215

4) Disconnect the connector (2P) and the grip ring; then, detach the registration roller clutch (CL1).



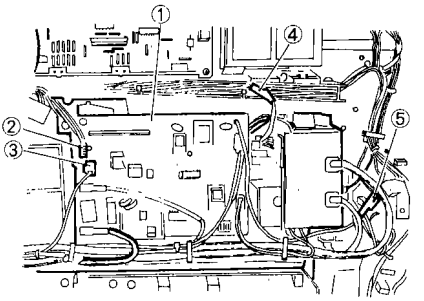
① Connector ③ CL1
② Grip ring

Figure 4-216

F. Other Drive Assemblies

1. Detaching the Set-Back Roller Drive Motor, Fixing Drive Assembly, and Cleaning Belt Drive Solenoid

1) Detach the rear cover.
2) Disconnect J1, J3, J5, J12, and J83 from the high-voltage transformer; remove the two screws, and detach the high-voltage transformer.



① High-voltage transformer ④ J12
② J1 ⑤ J83
③ J5

Figure 4-217

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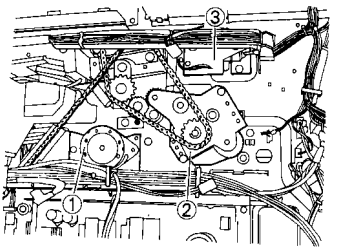
3) Detach the parts shown by removing the screws indicated.



① Set-back roller drive motor (2 screws)
② Fixing drive assembly (2 screws)
③ Cleaning belt drive solenoid (2 screws)

Figure 4-218

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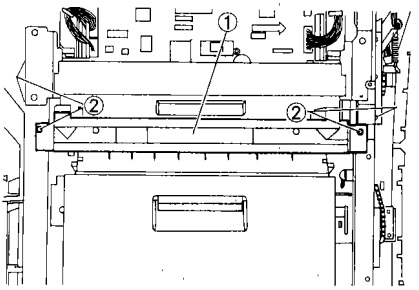
III. FEEDER SYSTEM

A. Pick-Up Assembly

1. Detaching the Manual Feed Pick-Up Roller, Manual Feed Pick-Up Guide, and Lower Feeder Assembly Guide

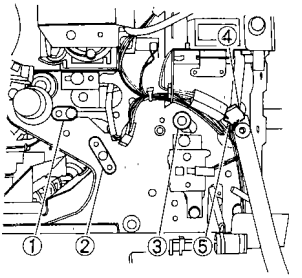
1) Detach the manual feed assembly cover.
2) Open the front door; remove the two screws, and detach the inside right cover.
3) Detach the rear cover.
4) Remove the five screws, and detach the manual feed assembly stay.



① Manual feed assembly stay
② Screws

Figure 4-300

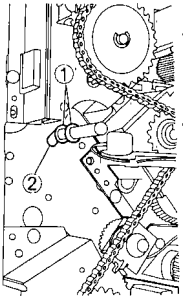
5) Remove the screw, and detach bushings 1 and 2; remove the E-ring, and detach bushing 3; then, remove the varistor mounting screw, and disconnect the connector.



① Bushing 1
② Bushing 2
③ Bushing 3
④ Varistor mounting screw
⑤ Connector

Figure 4-301

6) Remove the screw, and detach the manual feed pick-up drive assembly.
7) Remove the screw, and detach the manual feed clutch.
8) Remove the two E-rings, and detach bushing 4.



① E-ring
② Bushing 4

Figure 4-302

9) Detach the lower feeder outlet guide.
10) Detach the manual feed pick-up roller and the manual feed pick-up guide.

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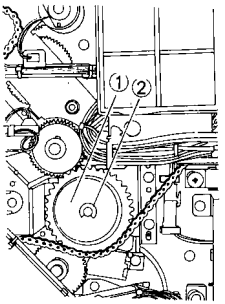
2. Detaching the Pick-Up Roller Shaft

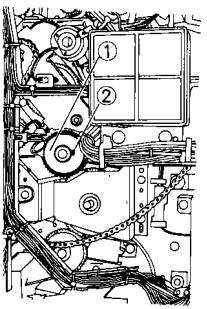
1) Detach the rear cover and the lower front cover.
2) Remove the E-ring, and detach gear 1.



① Gear 1 ② E-ring

Figure 4-303

3) Remove the hex screw, and detach gear 2 and the pin.



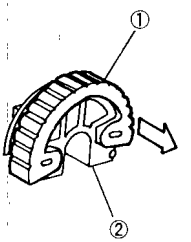
① Gear 2 ② Hex screw

Figure 4-304

4) Remove the E-rings from both ends of the pick-up roller shaft, and detach the bushings; then, pull out the pick-up roller shaft.

3. Pick-Up Roller

1) Detach the pick-up roller from the pick-up roller shaft.
2) Detach the rubber member from the pick-up roller mount ; Figure 4-305.



① Rubber member (pick-up roller)
② Pick-up roller mount

Figure 4-305

4. Position of Pick-Up Roller

Make sure that the pick-up roller is attached to the pick-up roller shaft as shown in Figure 4-306.

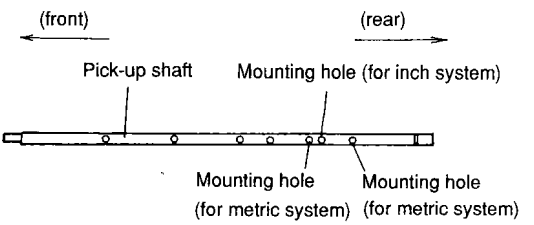


Figure 4-306

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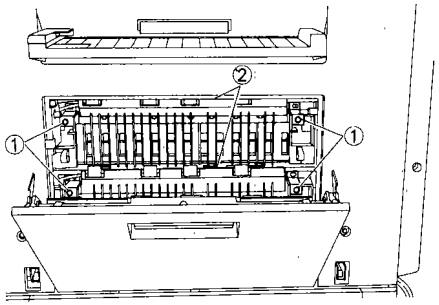
5. Detaching the Vertical Path Rollers 1 and 2

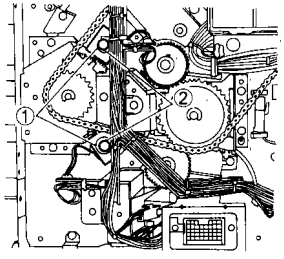
1) Detach the lower front cover.
2) Open the right door.
3) Remove the two mounting screws each, and slide out pick-up guides 1 and 2.



① Mounting screws ② Pick-up guides 1 and 2

Figure 4-307

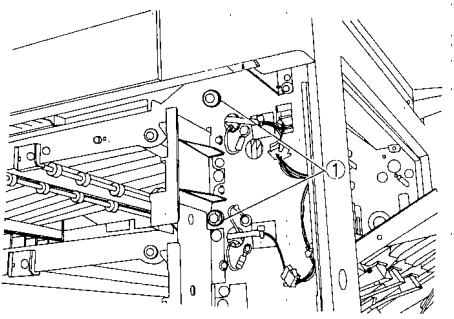
4) Detach the rear cover.
5) Remove the hex screw, and detach the drive clutch.



① Hex screws ② Drive clutches

Figure 4-308

6) Remove the E-ring from both ends of the shaft, and detach vertical path rollers 1 and 2.



① E-rings

Figure 4-309

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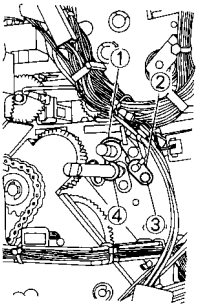
6. Detaching the Registration Roller (upper, lower)

1) Detach the registration roller drive assembly and the horizontal registration drive assembly.
2) Remove the screw on the drum drive assembly side; i.e., of the two screws that hold the varistor.
3) Detach the drum unit.
4) Detach the pressure spring and bushing 1.

Note:

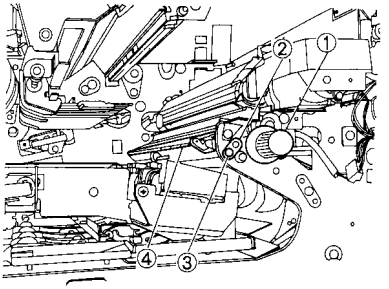
Of the two screws on bushing 1, keep the one on the varistor side as it is.



① Pressure spring
② Bushing 1
③ Mounting screw
④ E-ring

Figure 4-310

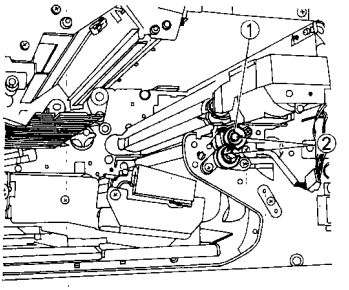
5) Remove the screw, and detach the tab and bushing 2; then, detach the transfer guide.



① Tab
② Bushing 2
③ Mounting screw
④ Transfer guide

Figure 4-311

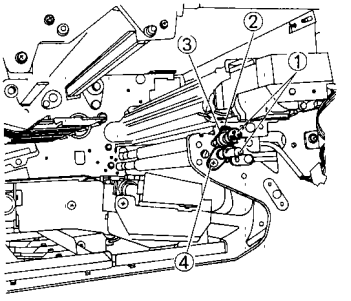
6) Remove the screw, and detach the pre-transfer rail.
7) Remove the two E-rings, and detach bushing 3.



① Bushing 3
② E-rings

Figure 4-312

8) Remove the E-ring and the screw; detach the pressure spring and bushing 4; then, detach the registration roller (upper, lower).



① E-ring
② Pressure spring
③ Bushing 4
④ Mounting screw

Figure 4-313

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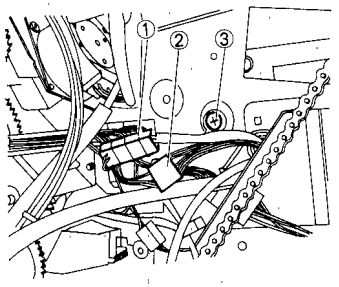
B. Feeder Assembly

1. Detaching the Feeder Assembly

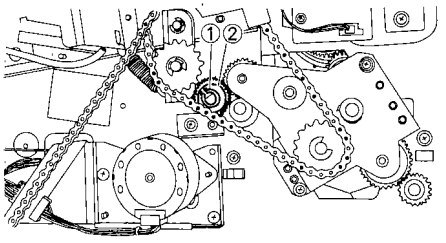
1) Open the front door,and detach the drum unit.
2) Detach the rear cover.
3) Detach the high-voltage transformer and the air duct.
4) Disconnect J60, and J61.
5) Detach the grounding wire.
6) Lead the cords into the inside of the machine.



① J60
② J61
③ Grounding cord

Figure 4-314

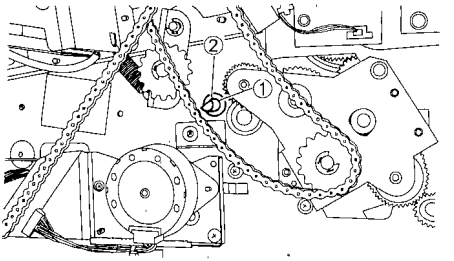
7) Remove the grip ring.
8) Detach the gear.



① Grip ring
② Gear

Figure 4-315

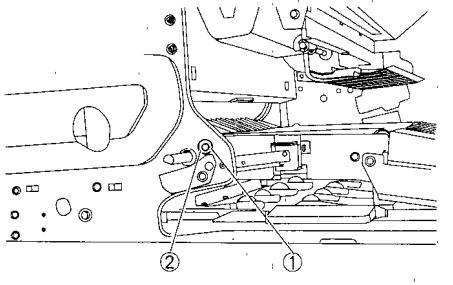
9) Remove the E-ring, and pull out the bushing.



① E-ring
② Bushing

Figure 4-316

10) Detach the feeder knob, fixing tab, and inside cover.
11) Remove the E-ring, and pull out the bushing.



① E-ring
② Bushing

Figure 4-317

12) Lift the front of the feeder assembly, and slide it out slowly to the front of the machine.

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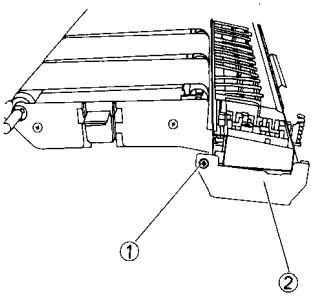
2. Detaching the Feeder Belt

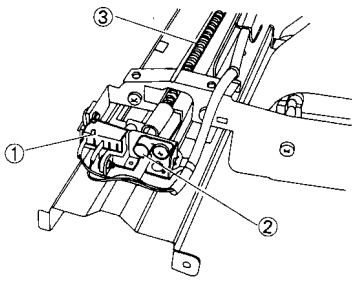
1) Detach the feeder assembly from the machine.
2) Remove the screw, and detach the cover; then, detach the corona assembly.



① Screw ② Cover

Figure 4-318

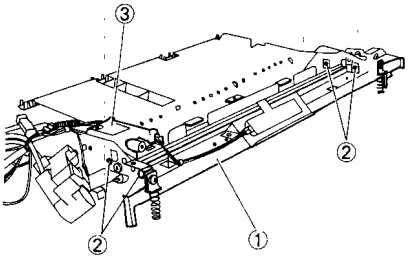
3) Remove the screw, and detach the microswitch used to detect the wire cleaner home position.
4) Remove the screw, and detach the bushing of the wire cleaner shaft; then, detach the shaft.



① Microswitch ③ Wire cleaner shaft
② Bushing

Figure 4-319

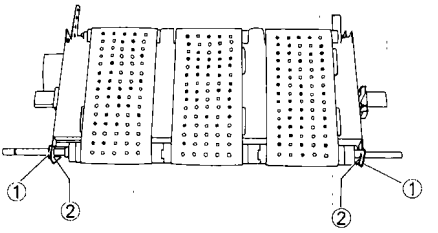
5) Remove the screw, and detach the corona assembly electrode.
6) Remove the four screws, and detach the motor housing; then, detach the transfer/separation corona assembly guide.



① Transfer/Separation guide ② Screws
③ Motor housing

Figure 4-320

7) Remove the E-ring, and detach the bushing; then, detach the feeder roller.



① E-rings ② Bushings

Figure 4-321

Note:

Make sure that the feeder roller is attached in its correct orientation.

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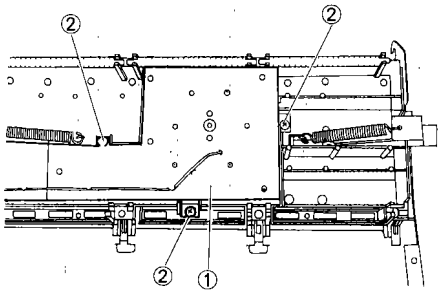
8) Detach the feeder belt.
9) Remove the E-ring, and detach the shaft; two shafts in all.
10) Remove the four screws, and detach the feeder fan.



① Feeder fan ② Screws

Figure 4-322

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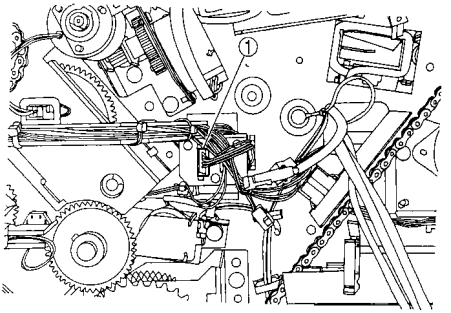
C. Lower Feeder Assembly (NP3050 only)

1. Detaching the Lower Feeder Assembly

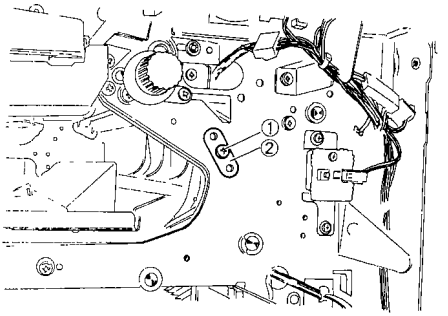
1) Detach the rear cover and the air duct.
2) Disconnect J56 and J9; others only; then, lead them through the hole in the rear end plate and into the machine.



① J56

Figure 4-323

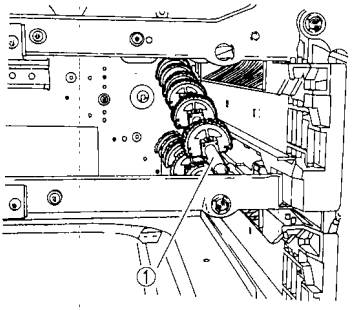
3) Slide out the upper cassette; then, detach the inside right cover, front cover, and lower front cover.
4) Remove the screw, and detach the upper cassette left rail.
5) Remove the screw, and detach the bushing of the lower feeder assembly outlet; then, move the outlet to the right.



① Screw ② Busing

Figure 4-324

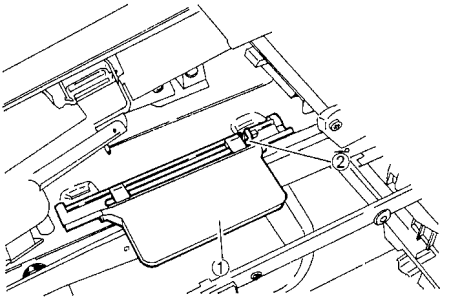
6) Remove the E-ring and the bushing at the front of the upper pick-up roller shaft; then, detach the pick-up roller shaft (front) from the front end plate to move it away to the bottom of the machine. (The pick-up roller need not be removed from the machine).



① Pick-up roller shaft

Figure 4-325

7) Remove the grip pin, and detach the grip of the lower feeder upper guide.



① Grip ② Grip pin

Figure 4-326

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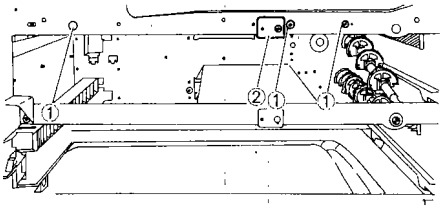
8) Remove the three screws that hold the lower feeder assembly to the front end plate; then, detach the cassette stop.



① Screws ② Cassette stop

Figure 4-327

9) Slide out the lower feeder assembly from the upper cassette inlet/outlet.

2. Adjusting the Height of the Separation Flapper

As a rule, the distance between the separation flapper and the lower feeder lower guide must be 1.0 to 2.0 mm when the separation flapper is down, i.e., when the separation flapper is lowered by the solenoid.

1) Loosen the fixing screw on the solenoid.
2) Put a washer (1.0 mm thick) under the separation flapper.

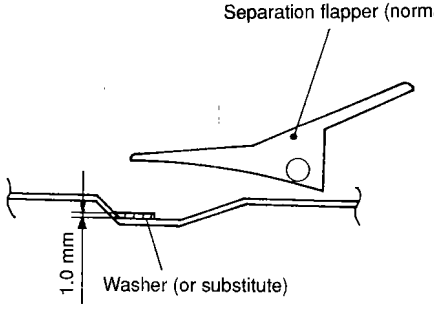


Figure 4-328

3) Push the solenoid shaft into its housing with a finger, and move the solenoid in the direction of the arrow until the tip of the flapper comes into contact with the washer.

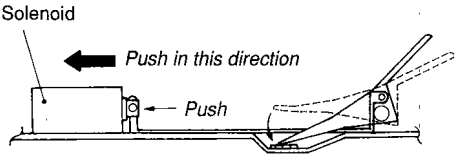


Figure 4-329

4) Tighten the solenoid fixing screw while holding the solenoid in that condition.
5) Make sure that the gap between the separation flapper and the lower feeder assembly lower guide is between 1.0 mm and 2.0 mm with the flapper down.

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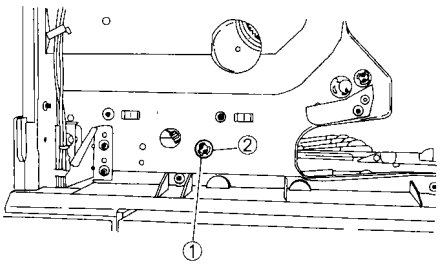
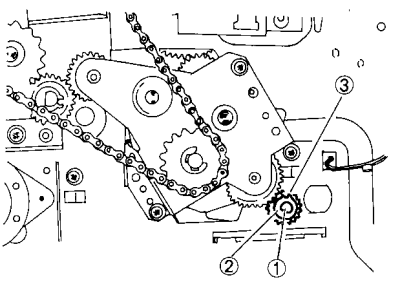
3. Detaching the Lower Feeder Inlet Guide (NP3050 only)

1) Open the front door.
2) Detach the inside left cover.
3) Remove the E-ring, and pull out the bushing.



① E-ring ② Bushing

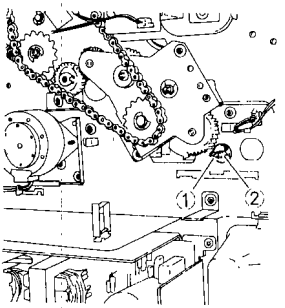
Figure 4-330



① Lower feeder inlet roller shaft ② Grip ring ③ Gear

Figure 4-331

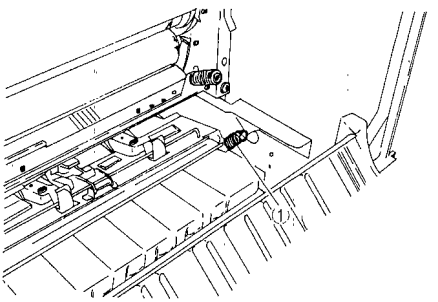
7) Remove the E-ring, and pull out the bushing.



① E-ring ② Bushing

Figure 4-332

8) Open the delivery assembly, and detach the connector cover.
9) Detach the delivery guide spring.



① Spring

Figure 4-333

10) Slide out the lower feeder inlet guide through the side of the machine.

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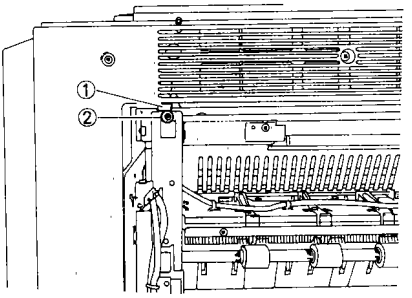
D. Delivery Assembly

1. Detaching the Delivery Assembly

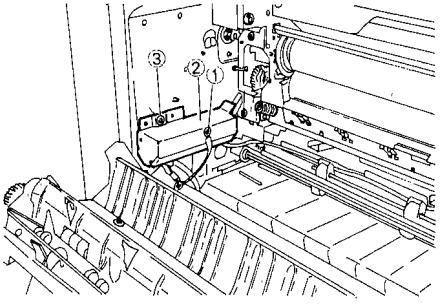
1) Remove the two screws, and detach the delivery cover.
2) Remove the screw from the delivery assembly support tape.



① Support tape ② Screw

Figure 4-334

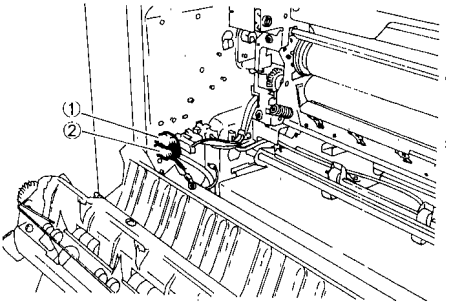
3) Open the delivery assembly, and remove the screw and the grounding wire.
4) Remove the screw, and detach the connector cover.



① Grounding wire ③ Mounting screws
② Connector cover

Figure 4-335

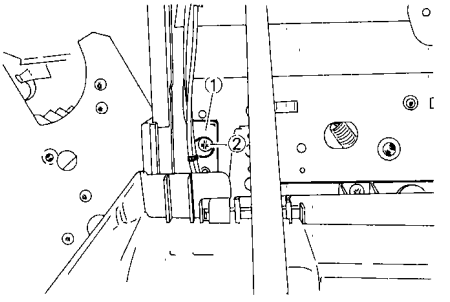
5) Disconnect J65 and J67.



① J65 ② J67

Figure 4-336

6) Detach the inside left cover.
7) Detach the support plate, and detach the delivery assembly.



① Delivery assembly ② Mounting screw
support plate

Figure 4-337

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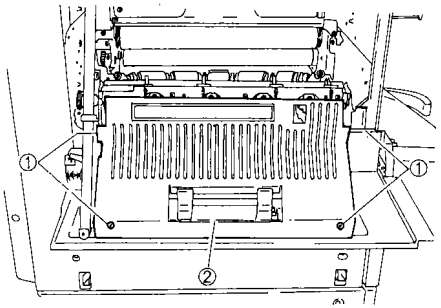
2. Detaching the Upper Separation Claw

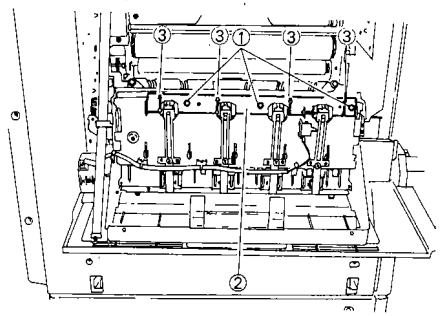
1) Open the delivery assembly.
2) Remove the four screws, and detach the insulation cover.



① Screws ② Insulation cover

Figure 4-338

4) Remove the three screws, and detach the upper separation claw together with the support plate.

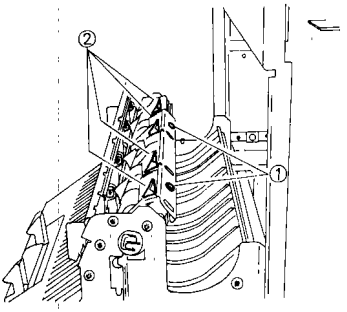


① Screws
② Support plate
③ Upper separation claw

Figure 4-339

3. Detaching the Lower Separation Claw

1) Open the delivery assembly.
2) Remove the two screws, and detach the lower separation claw.



① Screws ② Lower separation claw

Figure 4-340

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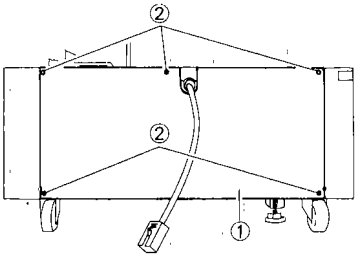
E. Cassette Feeding Unit

1. Pick-Up Roller 3

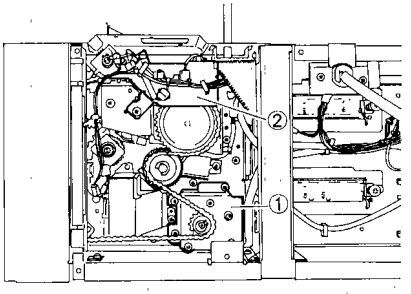
1) Remove the five screws, and detach the cassette feeding unit rear cover.



① Rear cover ② Mounting screws

Figure 4-341

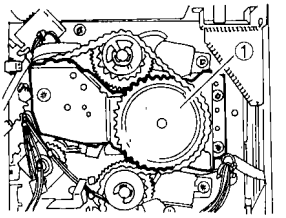
2) Detach the motor mount.
3) Detach the cord guide.



① Motor mount ② Cord guide

Figure 4-342

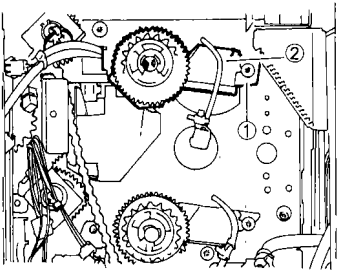
4) Detach the pick-up drive unit.



① Pick-up drive unit

Figure 4-343

5) Remove the screw from the solenoid mount.



① Screw ② Solenoid mount

Figure 4-344

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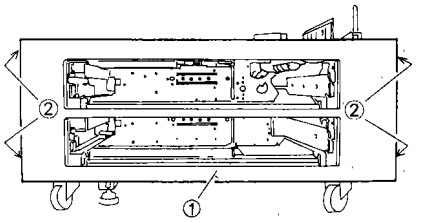
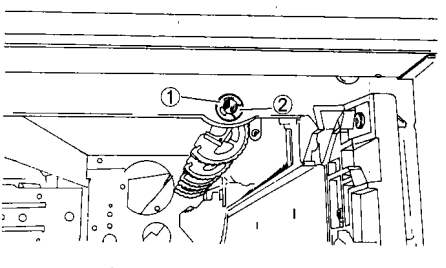
6) Detach the cassette pedestal front cover.



① Front cover ② Mounting screws

Figure 4-345

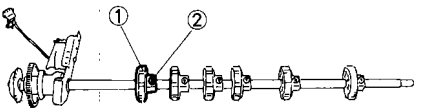
7) Remove the E-ring, detach the bushing, and pick-up roller 3.



① E-ring ② Bushing

Figure 4-346

8) Remove the screw , and remove the pick-up roller.

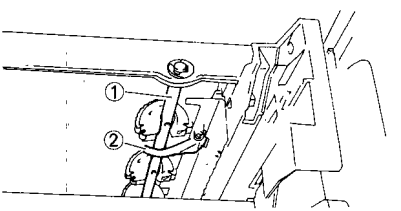


① Pick-up roller ② Screw

Figure 4-347

Note:

Make sure that the pick-up roller shaft is attached so that the arm of the cassette paper sensor is as shown in Figure 4-348.



① Pick-up roller shaft ② Sensor arm

Figure 4-348

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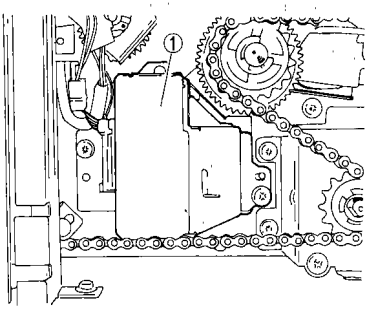
2. Pick-Up Roller 4

1) Detach the rail cover.



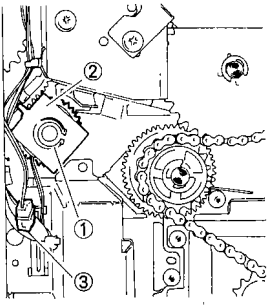
① Rail cover

Figure 4-349

2) For the rest of the steps, see the steps given for pick-up roller 3.

3. Vertical Path Roller 4

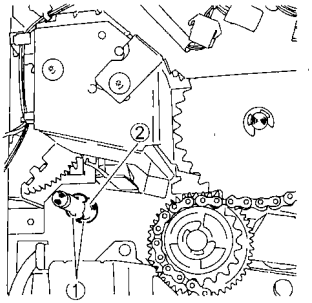
1) Detach the rear cover of the cassette feeding unit.
2) Disconnect the 2P connector (Figure 4-350), loosen the screw, and detach the clutch.



① Screw
② Clutch
③ 2P connector

Figure 4-350

3) Remove the two E-rings, and detach the bushing.



① E-rings
② Bushing

Figure 4-351

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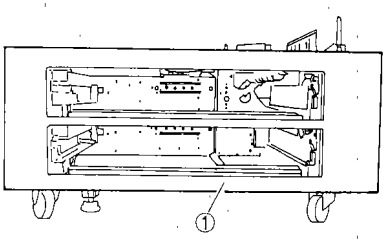
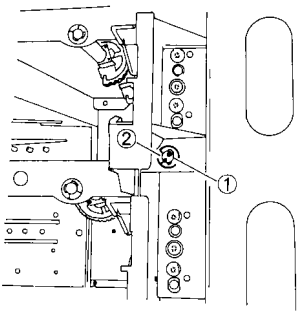
4) Detach the front cover of the cassette pedestal.



① Front cover

Figure 4-352

5) Remove the E-ring, and detach the bushing; then, detach vertical path roller 4.

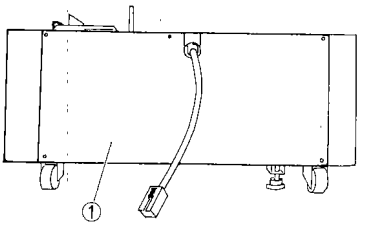


① E-ring ② Bushing

Figure 4-353

4. Vertical Path Roller 3

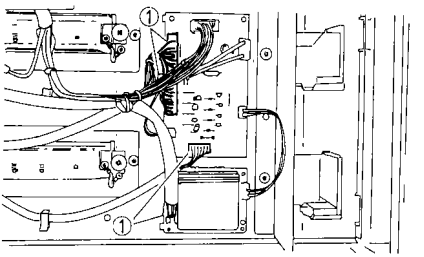
1) Disconnect the connector, and detach the copier from the cassette pedestal; then, lift the copier off the feeding unit.
2) Detach the rear cover.



① Rear cover

Figure 4-354

3) Disconnect the connectors.



① Connectors

Figure 4-355

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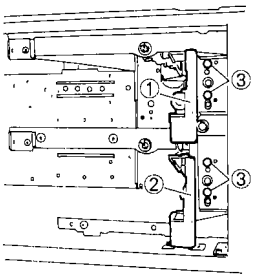
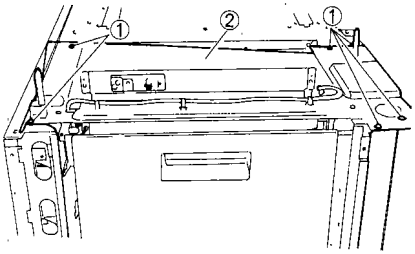
4) Detach the front cover.
5) Detach the front sections of the upper and lower cassette rails.



① Front section (upper cassette rail)
② Front section (lower cassette rail)
③ Mounting screws

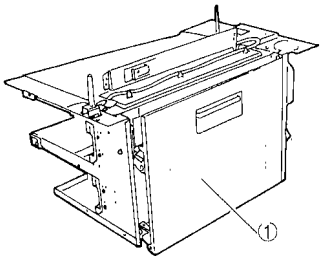
Figure 4-356

6) Remove the six mounting screws, and detach the pick-up unit from the feeding unit.



① Mounting screws ② Pick-up unit

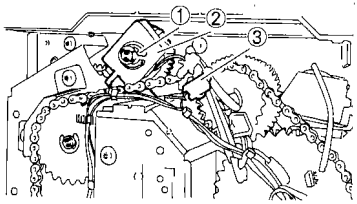
Figure 4-357



① Pick-up unit

Figure 4-358

7) Loosen the screw, and disconnect the connector; then, detach the clutch.



① Screw ③ Connector
② Clutch

Figure 4-359

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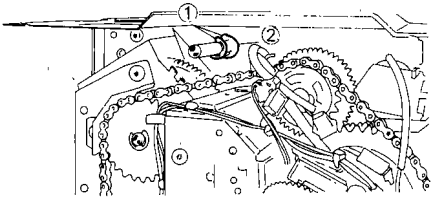
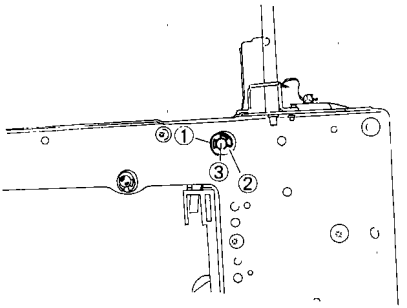
8) Remove the two E-rings, and detach the bushing.



① E-rings ② Bushing

Figure 4-360

9) Remove the E-ring and detach the bushing found at the front of the pick-up unit; then, detach vertical path roller 3.



① E-ring
② Bushing
③ Vertical path roller 3

Figure 4-361

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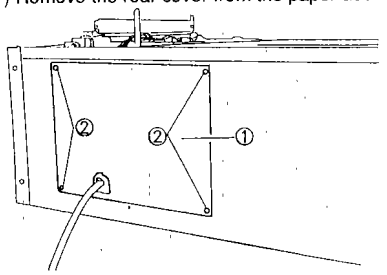
F. Paper Deck Pedestal-E1

1. Feed Roller

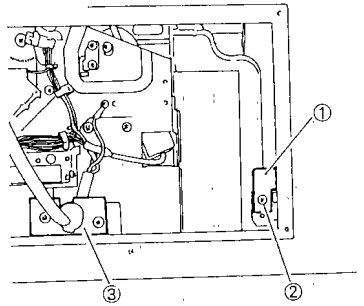
1) Remove the rear cover from the paper deck.



① Rear cover ② Mounting screws

Figure 4-362

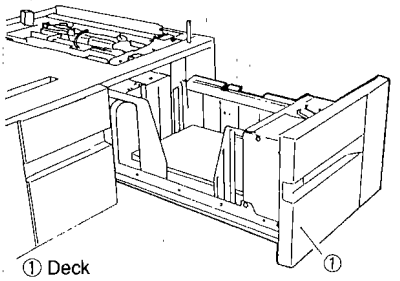
2) Remove the deck stop plate.
3) Remove the cord cover.



① Deck stop plate ③ Cord cover
② Mounting screw

Figure 4-363

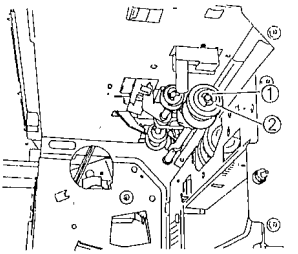
4) Remove the deck.



① Deck

Figure 4-364

5) Remove the stop ring, and remove the feed roller.



① Stop ring ② Feed roller

Figure 4-365

Note:

The feed roller has its own orientation; mount it so that it is as shown in Figure 4-366.

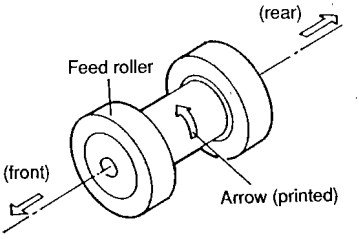


Figure 4-366

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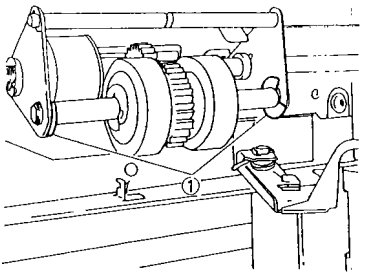
2. Separation Roller

1) Open the side door.
2) Remove the two stop rings (rear, front).



(front) (rear)

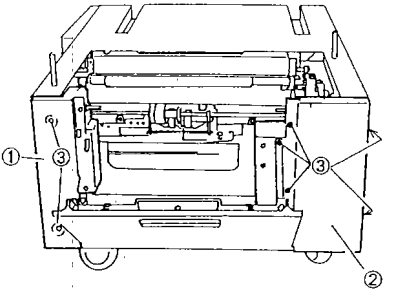
① Stop ring

Figure 4-367

3) Remove the separation roller together with its shaft.

3. Pick-Up Unit

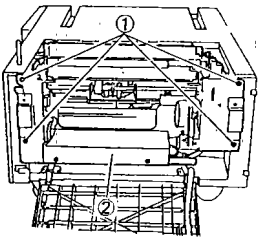
1) Lift the copier off the paper deck, and remove the deck.
2) Remove the side covers (front, rear).



① Side cover (front) ③ Mounting screws
② Side cover (rear)

Figure 4-368

3) Remove the four mounting screws, and remove the pick-up unit.



① Mounting screws ② Pick-up unit

Figure 4-369

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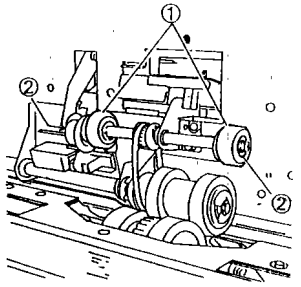
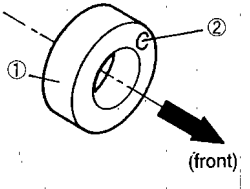
4) Remove the E-rings, as necessary and remove the pick-up rollers.



①Pick-up rollers ② E-rings

Figure 4-370

The pick-up roller has its own orientation attach it so that the mark on the roller is to the front of the machine.

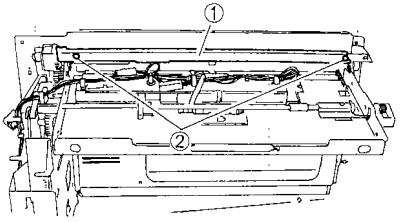


① Pick-up roller ② Mark

Figure 4-371

4. Registration Roller

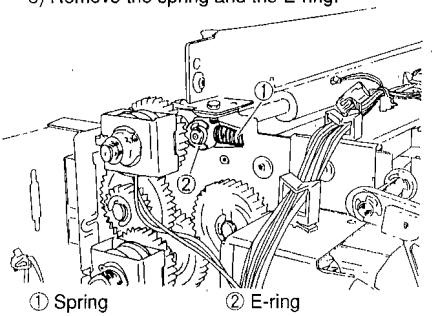
1) Remove the deck drive unit.
2) Remove the crossmember.



① Crossmember ② Screw

Figure 4-372

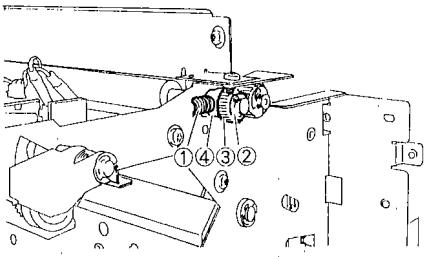
3) Remove the spring and the E-ring.



① Spring ② E-ring

Figure 4-373

4) Remove the spring and the E-ring; then, detach the bushing on the opposite side.



① Spring ③ Gear
② E-ring ④ Bushing

Figure 4-374

5) Remove the registration roller.

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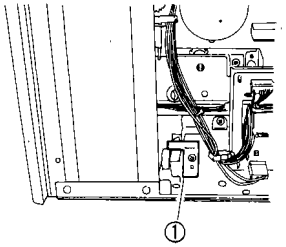
G. Paper Deck Pedestal-D1

1. Detaching the Deck (left/right)

1) Remove the five screws, and detach the rear cover of the paper deck.
2) Remove the screw, and detach the deck stop plate.



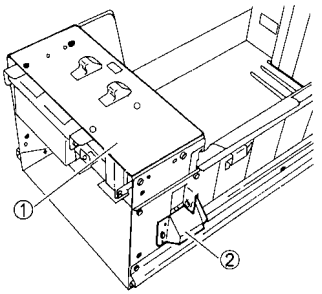
① Stop plate

Figure 4-375

3) Detach the deck unit from the paper deck.

2. Detaching the Lifter Cable (left/right deck)

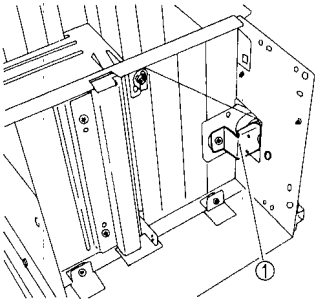
1) Detach the deck unit from the paper deck.
2) Remove the four screws, and detach the deck front cover.
3) Remove the five screws, and detach the front upper stay and the gear cover.



① Front upper stay ② Gear cover

Figure 4-376

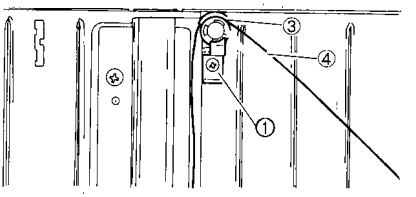
4) Remove the screw, and detach the damper.



① Damper

Figure 4-377

5) Remove the E-ring, and detach the gear, pin, and pulley cover.
6) Detach the cable end from the pulley.
7) Remove the metal stop from the cable relay mount; then, detach the pulley cover and detach the cable from the pulley.



① Metal stop ③ Pulley cover
④ Cable

Figure 4-378

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8) Remove the two cable mounting screws from the lifter assembly.

Note:

Use the same steps to detach the rear cable. When routing the cable, make sure that the lifter is level between the front and the rear by adjusting the tension of the cable using the cable take-up pulley.

3. Routing the Lifter Cable

1) Route the lifter in the order shown.
2) Engage the end of the lifter cable on the hook; then wind the cable once around the pulley. Rotate the pulley until the lifter is level between the front and the rear (arrow); then, fix the pulley to the shaft using two screws.

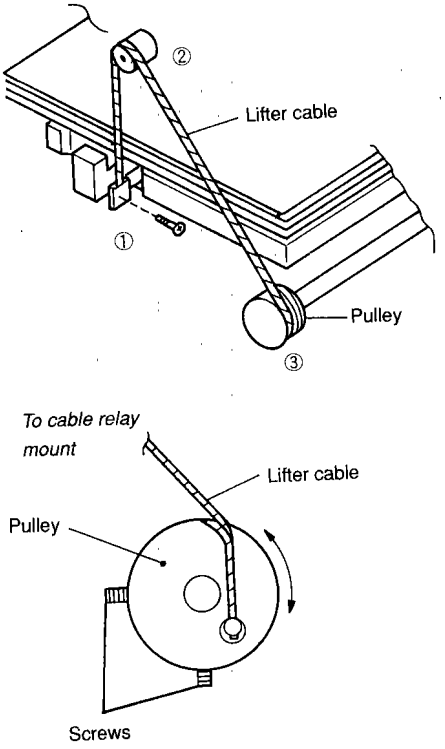
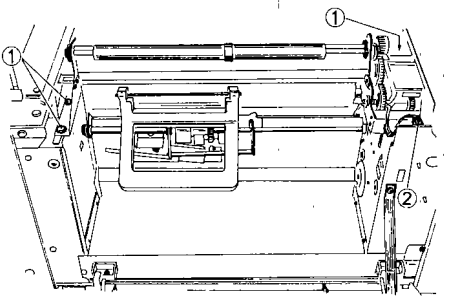


Figure 4-379

4. Detaching the Deck Registration Roller

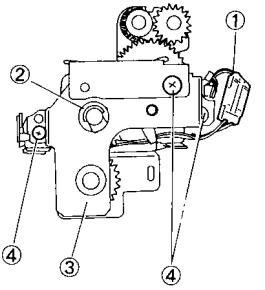
1) Detach the right pick-up unit; see the steps given for detachment of the right pick-up unit.
2) Remove the four screws that hold the deck registration roller assembly, and disconnect J730.



① Screws ② J730

Figure 4-380

3) Disconnect J717.
4) Remove the E-ring from the deck registration roller drive clutch shaft.
5) Remove the three screws, and detach the rear end plate.



① J717 ③ Rear end plate
② E-ring ④ Screws

Figure 4-381

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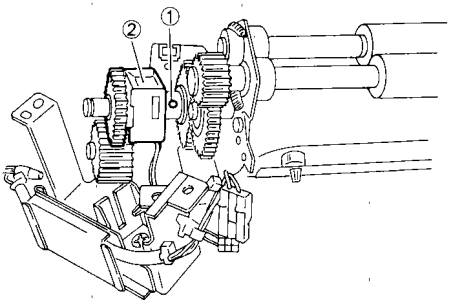
6) Loosen the fixing screw, and detach the deck registration roller drive clutch.

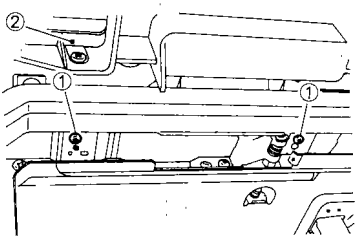


① Fixing screw ② Clutch

Figure 4-382

5. Detaching the Left Feeder Assembly

1) Detach the right deck.
2) Detach the left deck.
3) Remove the two screws from the left feeder assembly.



① Left feeder assembly screws ② Left feeder assembly

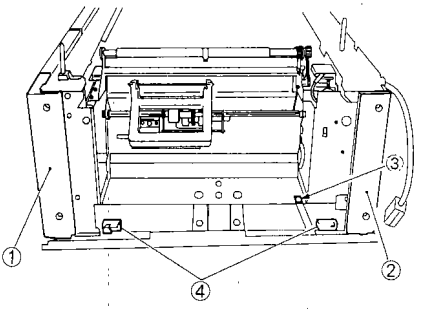
Figure 4-383

4) Slide out the left feeder assembly to the front, and detach it from the paper deck.

6. Detaching the Right Pick-Up Unit

1) Detach the right deck from the paper deck.
2) Detach the left deck from the paper deck.
3) Detach the left feeder assembly.

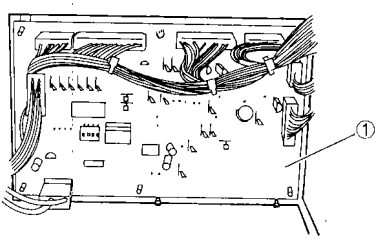
4) Detach the front right cover and the rear right cover; then, remove the belt stop screw, and detach the two right door hinges.



① Front right cover
② Rear right cover
③ Right door belt stop screw
④ Right door hinges

Figure 4-384

5) Disconnect the seven connectors, and remove the two screws; then, detach the deck controller.



① Deck controller

Figure 4-385

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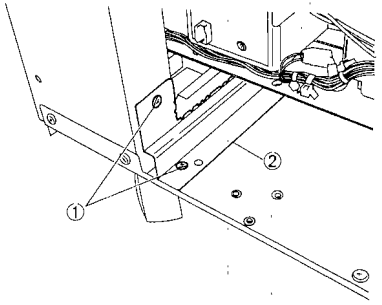
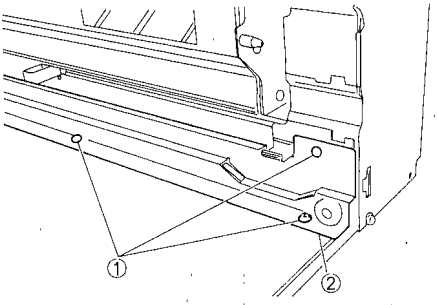
6) Remove the five screws, and detach the right deck right rail.



① Screws ② Right deck right rail (rear)

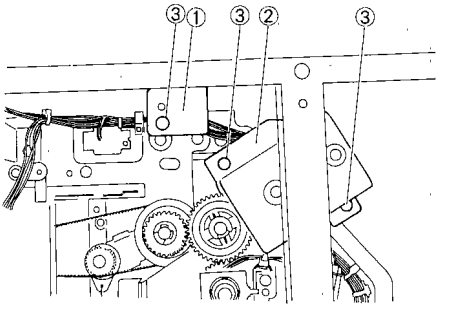
Figure 4-386



① Screws ② Right deck right rail (front)

Figure 4-387

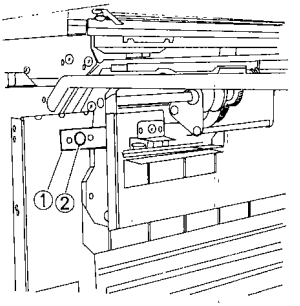
7) Remove the three screws, and detach the rear support plate and the left feeder shaft support plate.



① Rear support plate ③ Screws
② Left feeder shaft support plate

Figure 4-388

8) Remove the screw, and detach the front support plate.



① Front support plate ② Screw

Figure 4-389

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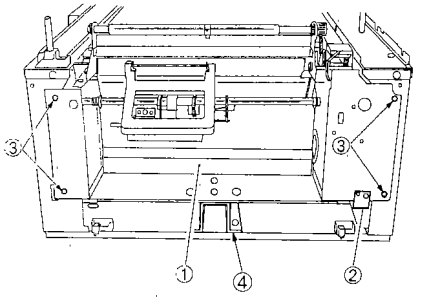
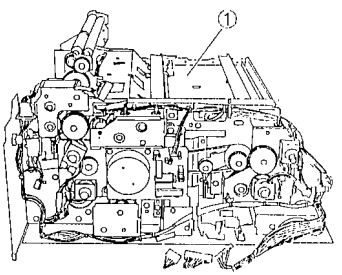
9) Remove the screw, and detach the right pick-up stop plate.
10) Detach the suppont mount; four screws.
11) Remove the four unit fixing screws, and slide out the right pick-up unit.



① Right pick-up unit
② Stop plate
③ Screw
④ Suppont mount

Figure 4-390

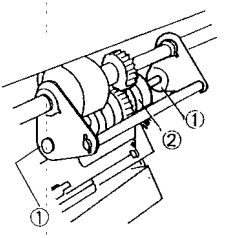


① Right pick-up unit

Figure 4-391

7. Detaching the Right Separation Roller

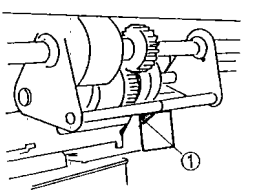
1) Open the right door.
2) Remove the two E-rings.



① E-rings
② Separation roller

Figure 4-392

3) Detach the shaft retainer spring.



① Shaft retainer spring

Figure 4-393

4) Detach the right separation roller together with its shaft.

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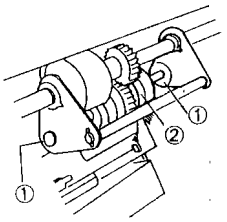
8. Detaching the Left Separation Roller

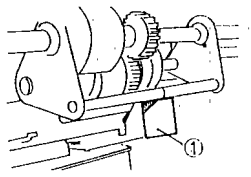
1) Detach the right pick-up unit.
2) Remove the two E-rings.



① E-rings ② Separation roller

Figure 4-394

3) Detach the shaft retainer spring.



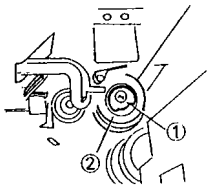
① Shaft retainer spring

Figure 4-395

4) Detach the left separation roller together with the shaft.

9. Detaching the Right Feeder roller

1) Detach the right deck from the paper deck.
2) Remove the E-ring.
3) Slide out the right feeder roller to the front.



① E-ring ② Right feeder roller

Figure 4-396

Note:

The feeder roller has its own orientation; attach it as shown in Figure 4-397.

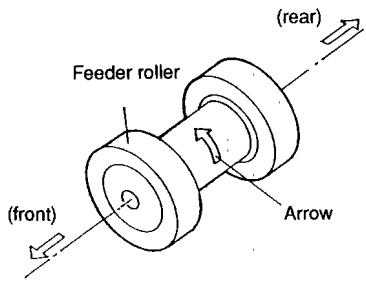


Figure 4-397

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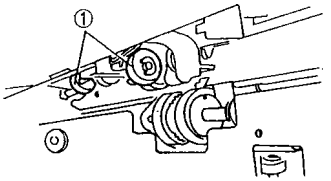
10. Detaching the Right Pick-Up Roller

1) Detach the right deck from the paper deck.
2) Detach the pick-up rollers, as necessary, from the collar.

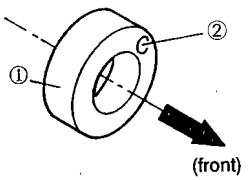


① Pick-up roller

Figure 4-398

Note:

The pick-up roller has its own orientation; attach it so that the mark on the roller is toward the front.

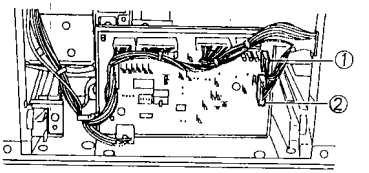


① Pick-up roller ② Mark

Figure 4-399

11. Detaching the Left Pick-Up Unit

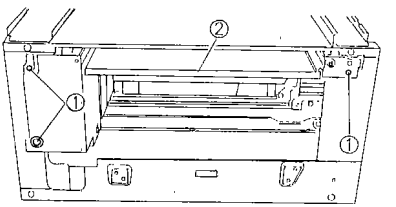
1) Remove the five screws, and detach the rear cover; then, detach the left deck from the paper deck.
2) Disconnect J707 and J708 from the deck controller.



① J707 ②J708

Figure 4-3100

3) Remove the two screws, and detach the left feeder shaft support plate, see Figure 4-00.
4) Remove the four screws, and detach the left cover.
5) Remove the three left pick-up unit stop screws.



① Left pick-up unit stop screws
② Left pick-up unit

Figure 4-3101

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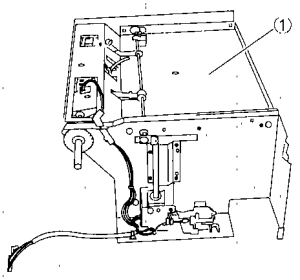
6) Slide out the left pick-up unit.

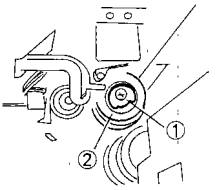


① Left pick-up unit

Figure 4-3102

12. Detaching the Left Feeder Roller

1) Detach the left deck from the paper deck.
2) Remove the E-ring.
3) Slide out the left feeder roller to the front.



① E-ring ② Left feeder roller

Figure 4-3103

Note:
The feeder roller has its own orientation; attach it as shown in Figure 4-3104.

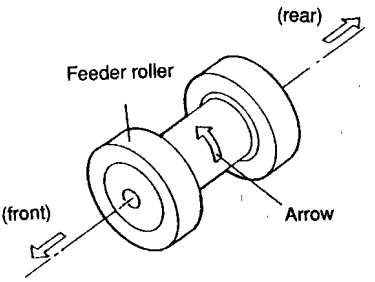
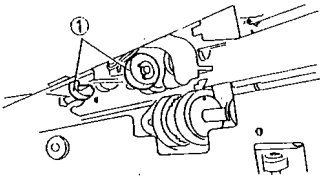


Figure 4-3104

13. Detaching the Left Pick-Up Roller

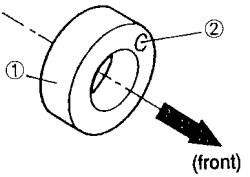
1) Detach the left deck from the paper deck.
2) Detach the pick-up rollers, as necessary, from the collar.



① Pick-up rollers

Figure 4-3105

Note:
The pick-up roller has its own orientation; attach it so that the mark on the roller is toward the front.



① Pick-up roller ② Mark

Figure 4-3106

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IV. EXPOSURE SYSTEM

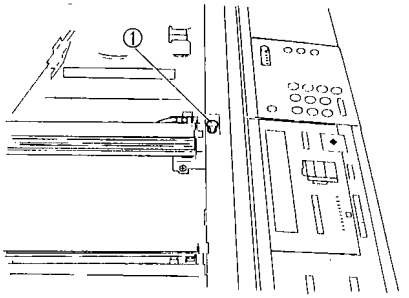
A. Scanning System

Note:

Make sure that the power cord is disconnected before disassembling or checking the scanning system.

1. Detaching the Thermal Fuse

1) Detach the copyboard glass.
2) Remove the screw, and detach the magnet plate.
3) Move the No. 1 mirror mount until the fuse screw shows through the hole in the magnet plate. (Be careful not to bend reflectors.)



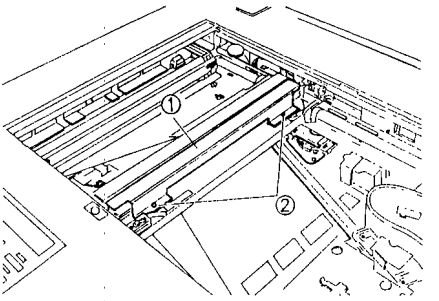
① Hole (magnet plate)

Figure 4-400

4) Remove the two mounting screws, and detach the thermal fuse.

2. Detaching the Scanning Lamp

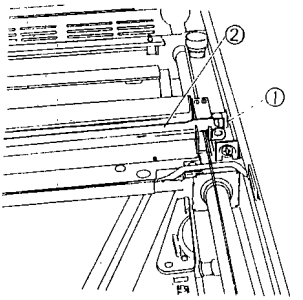
1) Detach the copyboard glass.
2) Remove the two screws, and detach the reflector cover.



① Reflector cover ② Screws

Figure 4-401

3) Remove the mounting screw from the lamp support (rear), and detach the scanning lamp.



① Lamp support (rear) ② Scanning lamp

Figure 4-402

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Note:

i. If the scanning lamp is hot, wait until it has cooled.
ii. When attaching the scanning lamp, make sure that the boss at the center of the lamp faces the opposite of reflector cover B and the lower reflector.
iii. Do not leave fingerprints on the surface of the scanning lamp.
iv. If the surface of the scanning lamp is soiled, dry wipe it.

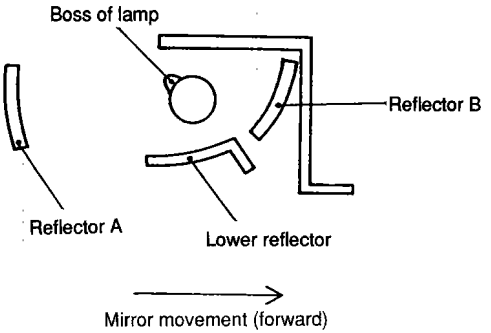

Figure 4-403

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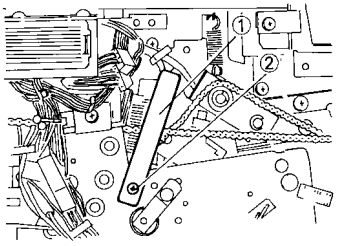
B. Blank Exposure Lamp Assembly

1. Detaching the Blank Exposure Lamp

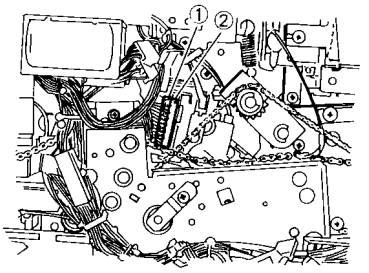
1) Detach the drum unit.
2) Detach the rear cover.
3) Remove the screw, and detach the blank exposure lamp retaining spring.



① Retaining spring ② Screw

Figure 4-404

4) Detach the chain from the tension gear.
5) Disconnect J553, and pull out the blank exposure lamp.



① J553 ② Blank exposure lamp

Figure 4-405

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V. CHARGING SYSTEM

A. Drum Unit

1. Outline

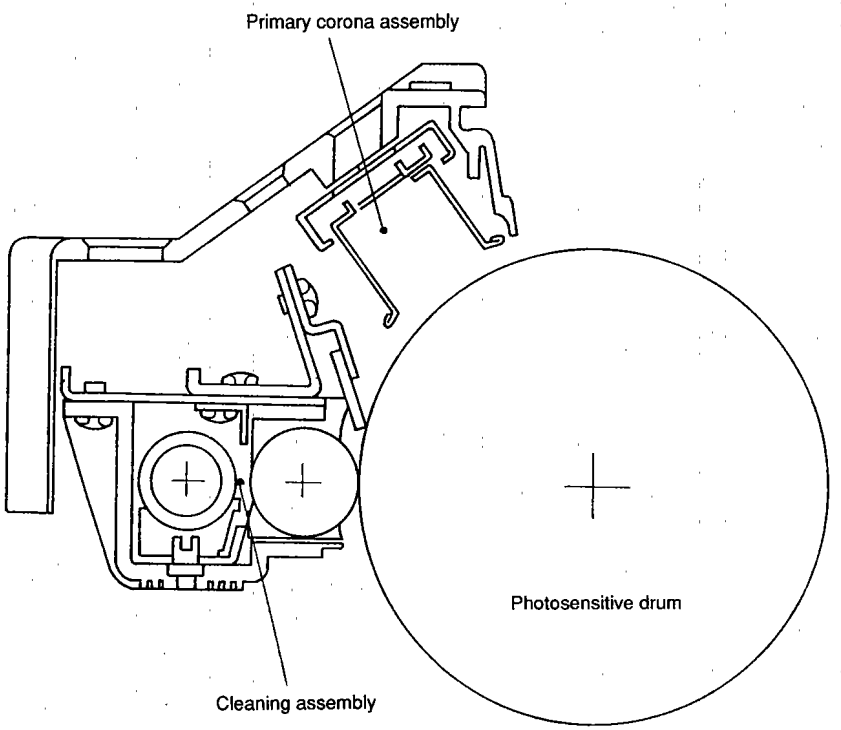

Figure 4-500

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2. Detaching the Drum Unit

1) Open the front door.
2) Detach the CD unit, if necessary.
3) Insert the door switch actuator into the door switch.
   · Wait until the WAIT period is over.
4) Disengage the black developing assembly in the service mode.
5) Detach the door switch actuating tool.
6) Detach the pre-transfer corona assembly.
7) Shift the feeder assembly release lever.
8) Open the hopper.
9) Remove the screw, and slide out the drum unit.

Note:

The machine's photosensitive drum is susceptible to light; exposure to room light is enough to affect its sensitivity, resulting in copies with white spots and black lines.

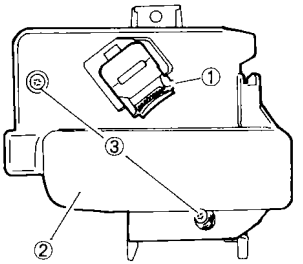
Wrap the drum unit in a light-blanking sheet (or copy paper) as soon is it is detached from the machine; and place it on a level surface, and keep it in a dark place.

Note:

i. Do not touch the drum separation claw; it will be disengaged automatically as the drum unit is inserted by the work of the roll attached to the drum unit.

3. Detaching the Drum Cleaning Assembly

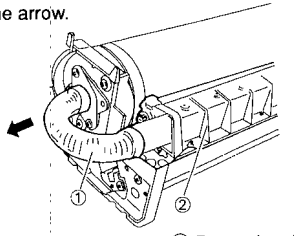
1) Detach the drum unit.
2) Detach the primary corona assembly.
3) Remove the two screws, and detach the drum unit front cover.



① Primary corona assembly
② Drum unit front cover
③ Screws

Figure 4-501

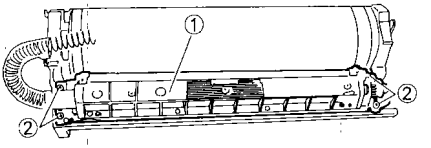
4) Place the drum unit on a sheet of paper.
5) Pull out the toner feedpipe into the direction of the arrow.



① Toner feedpipe
② Drum cleaning assembly

Figure 4-502

6) Remove the four screws, and detach the drum cleaning assembly.



① Drum cleaning assembly
② Screws

Figure 4-503

4. Cleaning

If the surface of the photosensitive drum is soiled, wipe it using a flannel cloth coated with toner; do not use paper, lint-free or otherwise.

Note:

i. Do not dry wipe the photosensitive drum, or do not use solvent.
ii. Do not use drum cleaning powder.

5. Notes on Replacement

When the drum unit has been replaced, record the date of replacement and the counter reading at the time in the label (Figure 4-504), and attach the drum on the front cover of the new drum unit.

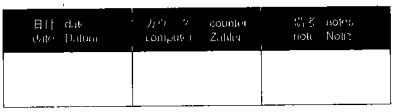


Figure 4-504

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6. Waste Toner

The waste toner collected by the cleaning assembly is forwarded and stored inside the photosensitive drum. When the inside of the photosensitive drum becomes full of waste toner, the 'DISPOSE OF TONER' message is indicated on the message display during copying operation.

Replace the drum unit when the message appears.

Note:

Copies may still be made after the message appears; replace the drum unit as soon as possible, however, since waste toner will start to fall into the feeder assembly after about 200 copies.

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B. Corona Assembly

1. Outline

The photosensitive drum is surrounded by the primary, pre-transfer, and transfer/separation corona assemblies.

A grid wire is attached to the primary corona assembly (16 runs); and the grid is made of corona wire, 0.1 mm in diameter.

The corona wire used for other corona assemblies is 0.06 mm in diameter and is gold plated.

Although the grid wire is not gold-plated, a gold-plated wire may be used in the field.

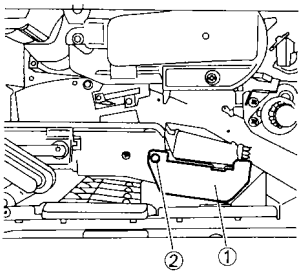
2. Detachment and Attachment

a. Detaching the Primary Corona Assembly

Hold the tab on the primary corona assembly, and lift it and slide to the front to detach.

b. Detaching the Transfer/Separation Corona Assembly

1) Open the front door.
2) Disengage the feeder assembly.
3) Remove the screw, and detach the transfer/separation corona assembly cover.



①Cover ② Screw

Figure 4-505

4) Slide out the transfer/separation corona assembly.

Note:

When attaching the wire cleaner, make sure that the corona wire is routed through the pads. Make copies, and check the image quality after attaching the drum unit.

c. Routing the Primary, Pre-Transfer, Transfer, and Separation Corona Wire

■ primary corona assembly,

1) Remove the screw, and detach the shield plate.

■ separation assembly,

Remove the screw, and open the shield plate; then, detach the paper guide.

2) Move the two covers of the corona assembly to the ends of the assembly to detach.
3) Free a length of about 4 cm from a 0.06-dia corona wire reel, and form a loop at the end about 2 mm in diameter.

Note:

When forming a loop, wind the corona wire around a hex key once; then, turn the hex key three to four times, and twist the wire.

4) Cut the end (excess) of the twisted corona wire to 1 mm or less using a nipper.
5) Hook the loop of the corona wire as shown in Figure 4-506, and lead the corona wire through the V-notch in the height adjusting roll.

Hook the corona tension spring on the corona wire, and twist the spring three to four times at the point shown in Figure 4-506.

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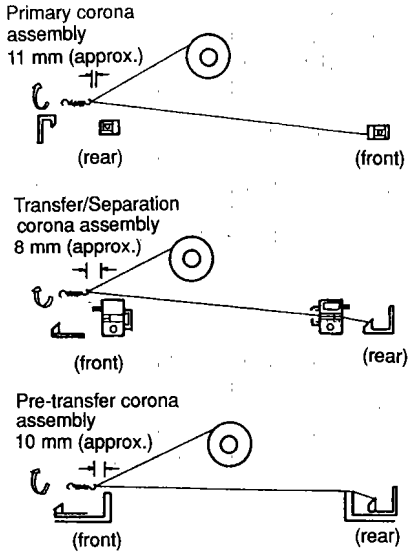

Figure 4-506

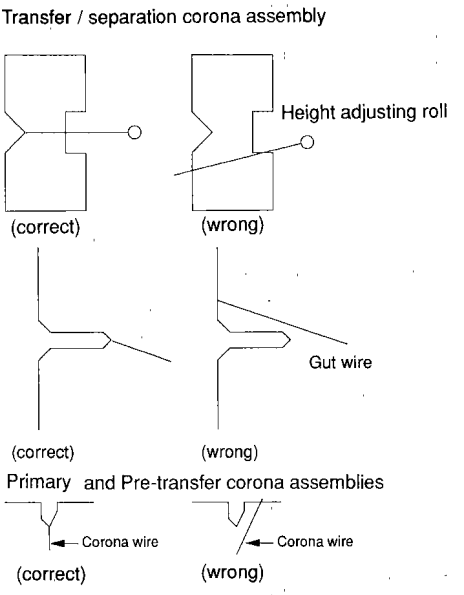

Figure 4-507

6) Cut the end (excess) of the corona wire to 1 mm or less using a cutter.
7) Pick the end of the corona wire tension spring using tweezers, and hook it on the corona electrode.

Note:

- Make sure that the corona wire is free of bends or twists, and its gold-plating has not peeled.
- Make sure that the corona wire is not slack.
- Make sure that the corona wire is lead through the V-notch of the height-adjusting roll.
- Make sure that the gut wire of the transfer/separation corona assembly is in the notch.

Note:

When re-routing the gut wire, make sure it is not too taut. After re-routing, measure the opening of the corona assembly, and make sure that its center is not narrower than its both ends by 0.5 mm or more.

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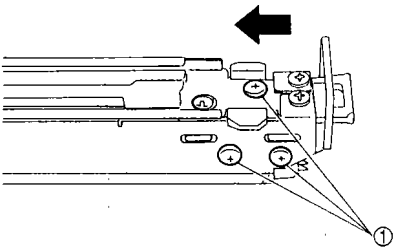
d. Routing the Grid Wire for the Primary Corona Assembly

1) Loosen the three screws that hold the block (front), and move the block in the direction of the arrow (Figure 4-508); then, tighten the screws temporarily.



① Screws

Figure 4-508

Note:

When forming a loop, wind the corona wire around the hex key once; then, turn the hex key four to five times, and twist the corona wire.

2) Free a length of corona wire from a 0.1-dia corona wire reel, and form a loop about 2 mm in diameter.
3) Cut the end (excess) of the wire with a loop to 1 mm or less using a cutter.
4) Hook the loop on the stud shown in Figure 4-509, and route the wire in the order given.
   ■ After 16 runs,
5) Wind the end of the corona wire around the fixing screw to fix it in place.
6) Cut the excess corona wire to 1 mm or less using a cutter.
7) Loosen the screw tightened temporarily in step 1) once again, and move the block into the opposite direction of the arrow (Figure 4-508); then, adjust the tension of the grid.
8) Dry wipe the grid wire.

- Make sure that the grid wire is free of bends and twists, and its gold-plating has not peeled.
- Make sure that the runs are at equal intervals, i.e.s, the grid wire is in the notch of the block.

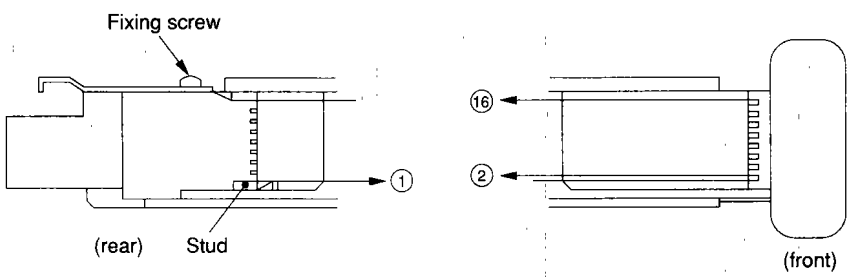


Figure 4-509

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3. Adjusting the Height of the Corona Wire

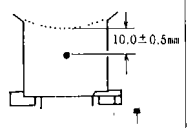
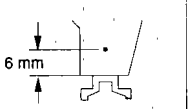
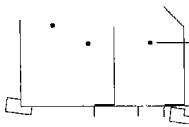
Corona Wire	Standards	Variable range
Primary	Value on label 	$10.0^{+1.0}_{-1.5}$ mm
Pre-transfer		–
Transfer	Value on label 	

Figure 4-510

a. Primary Corona Wire
The height (position) of the primary corona wire can be adjusted by turning the screw behind the corona assembly. A full turn of the screw moves the position of the corona wire by about 0.7 mm.
The values shown in Figure 4-510 are standard values; refer to the label attached on the drum cartridge for individual machines;
i.e., use the values recorded on the label.

b. Pre-Transfer Corona Assembly and Separation Corona Assembly Wires
The height of the corona wire is fixed; the value in Figure 4-510 is for reference only.

c. Transfer Corona Wire
As a rule, do not adjust the height. If transfer problems occur, check to make sure that the height is as recorded on the label behind the front door; and, if necessary, make adjustments in the service mode (TRN-1; ✱ 3 ✱).

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C. Separation Claw Assembly

1. Construction

The separation claw is moved back and forth across the shaft of the photosensitive drum over a length of 22 mm; the claw makes a single round trip for about each 75 copies (A4 or Letter, non-continuous).

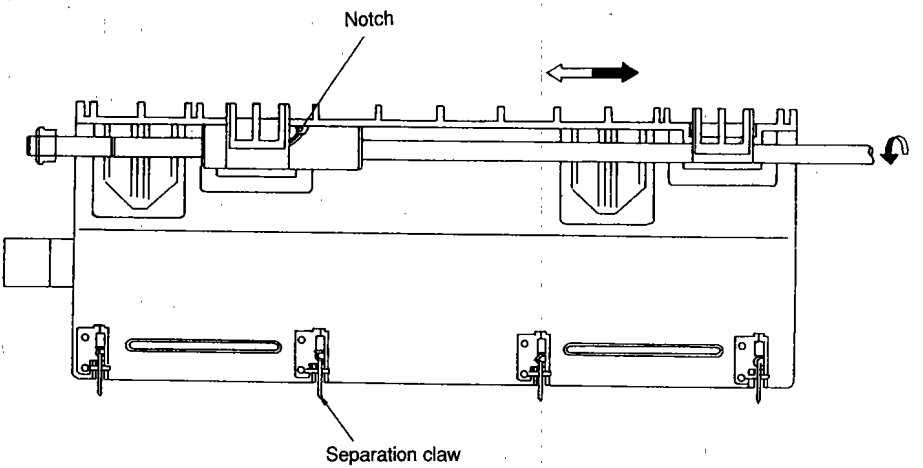


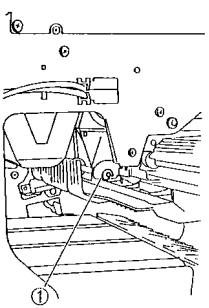
Figure 4-511

2. Detaching the Separation Claw Assembly

1) Open the front door.
2) Detach the drum unit.
3) Push the bushing to the rear, and detach the separation claw assembly.

Note:

i. Take care so that the tip of the separation claw will not come into contact with the belt.
ii. Take extra care not to damage the separation claw after detachment.
iii. After attaching the drum unit, make sure that the tip of the separation claw is in contact with the surface of the drum.



① Bushing

Figure 4-512

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VI. DEVELOPING SYSTEM

A. Black Developing System

1. Construction

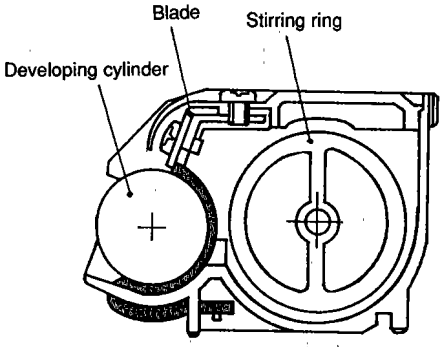


Figure 4-600

2. Detaching the Hopper

1) Open the front door.
2) Detach the control panel and the inside right cover.
3) Disconnect J7 (3P).
4) Remove the E-ring from the hopper shaft, and pull down and detach the hopper shaft.
5) Detach the hopper.

3. Detaching the Black Developing Assembly

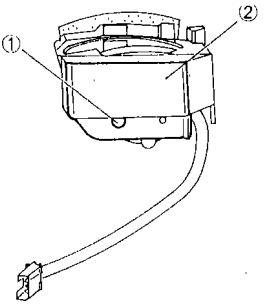
1) Disengage the black developing assembly.
2) Open the hopper.
3) Disconnect J40 (3P), and remove the screw.
4) Slide out the black developing assembly to the front with care; then, hold the bottom of the assembly, and detach it.

Note:

Do not hold the developing assembly as if to hold the developing cylinder from its both ends; otherwise, the toner may become fused.

4. Detaching the Blade and the Developing Cylinder

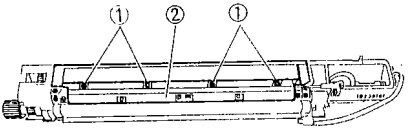
1) Detach the developing assembly.
2) Remove the self-tapping screw, and detach the grip.



① Self-tapping screw ② Grip

Figure 4-601

3) Remove the four non-magnetic screws, and detach the developing cover.

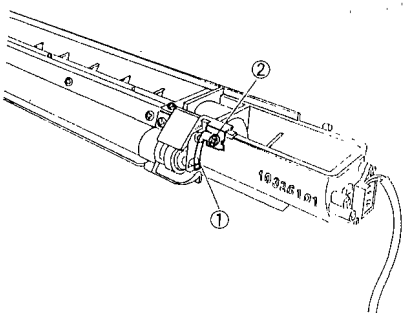


① Non-magnetic screws ② Developing cover

Figure 4-602

4) Pour out the toner on a newspaper or waste paper.

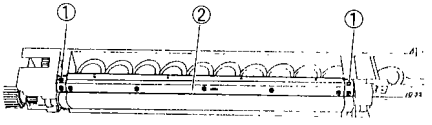
5) Remove the screw, and detach the electrode plate at the front.



① Electrode plate (front) ② Screw

Figure 4-603

6) Remove the five non-magnetic screws, and detach the blade together with the mount.

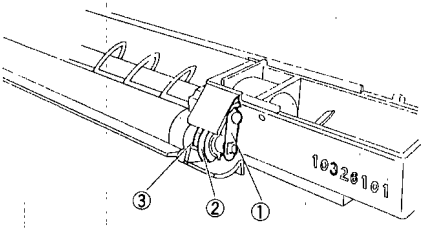


① Non-magnetic screws ② Blade

Figure 4-604

7) Remove the self-tapping screw, and detach the electrode mount.

8) Remove the grip ring, and detach the developing roll and the ball bearing.



① Electrode mount ③ Ball bearing
② Developing roll

Figure 4-605

9) Remove the grip ring, and detach gear A.
10) Remove the two screws, and detach the gear unit.
11) Detach gear B and the developing roll.

Note:

Take care not to drop the pin.

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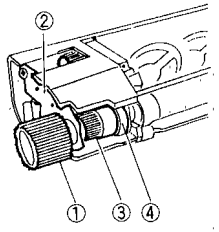
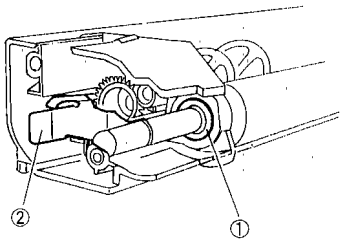


① Gear A
② Gear unit
③ Gear B (w/ pin)
④ Developing roll

Figure 4-606

13) Remove the self-tapping screw, and detach the electrode plate (rear) together with the ball bearing.



① Ball bearing
② Electrode plate (rear)

Figure 4-607

14) Detach the developing cylinder.

5. Attaching the Developing Cylinder and the Blade

1) Attach the developing cylinder.

Note:

i. The developing cylinder has its own orientation; attach it so that its longer shaft is toward the rear.
ii. Do not leave fingerprints or oil on the surface of the developing cylinder; dry wipe it using lint-free paper if necessary.

2) Attach the ball bearing together with the electrode plate at the rear.

Note:

iii. Do not fit the screw used to fix the electrode plate in place.
iv. Rotate the electrode plate in the direction of the arrow to facilitate attachment of the blade mount in step 5).

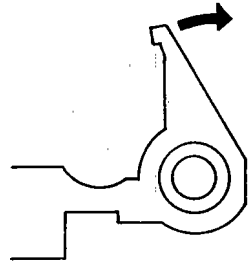


Figure 4-608

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Note:

v. Make sure that the ball bearing (rear) is in perfect contact with the developing cylinder.

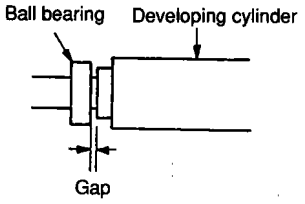

Figure 4-609

3) Attach the ball bearing at the front.
4) Loosen the five screws that hold the blade to the mount.
5) Attach the mount together with the blade to the container using two non-magnetic screws.

Note:

vi. The gap between the blade and the developing cylinder is ensured by the thickness of the scraper; force the scraper against the blade when attaching the scraper.
vii. Take care not to trap side seal 2 under the scraper.

6) Push the blade lightly against the developing cylinder, and tighten the screws in the order given in figure 4-610.

Note:

viii. Do not apply excessive force, or the cylinder rotation will drag.

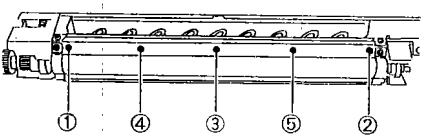

Figure 4-610

7) Turn the electrode plate at the rear in the direction of the arrow, and fix it in place using a self-tapping screw.

Note:

ix. Make sure that the blade mount and the electrode plate are in good contact with each other.
x. Make sure that the electrode plate has not overridden the blade mount.

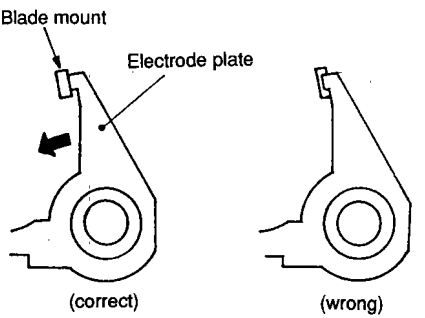

Figure 4-611

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8) Attach the developing roll, pin, and gear B at the rear.
9) Attach the gear unit together with the bushing using two non-magnetic screws.
10) Attach gear A, and fix it in place with a grip ring.
11) Attach the developing roll at the front, and fix it in place using a grip ring.

Note:

xi. Keep a gap of about 0.3 mm between the roll and the grip ring, and make sure that the roll rotates smoothly.

12) Attach the electrode mount at the front.
13) Push the electrode mount lightly in the direction of A, and release it.
14) Push the electrode mount in the direction of A until notch B is two scales further than notch C; then, fix it in place.

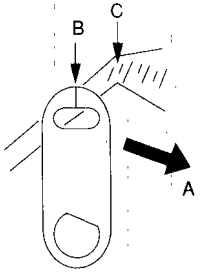


Figure 4-612

15) Attach the electrode plate at the front using a screw.

Note:

xii. Make sure that the electrode plate is in perfect contact with the developing cylinder and there is not foreign matter in between.

16) Put toner into the cylinder assembly of the black developing assembly and over the toner sensor; follow the steps used at time of installation.
17) Attach the developing cover using four non-magnetic screws, and attach the grip using a self-tapping screw.

6. Attaching the Side Seal

1) Attach the edge of side seal 1 flush with the extension of the curvature of the container (Figure 4-613) and the end of the container (Figure 4-614).
2) Keep the edge of side seal 2 a length of 1 mm away from the top face of seal 1 shown in Figure 4-613, and attach it flush with the end of the container shown in Figure 4-614; then, fit the boss into the hole.

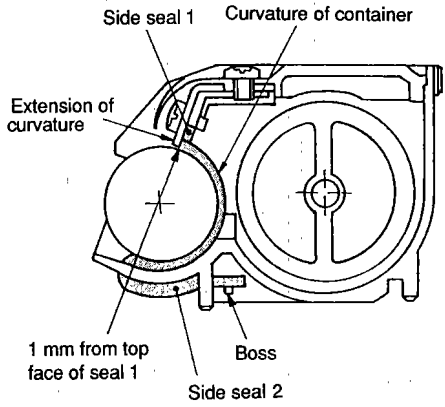


Figure 4-613

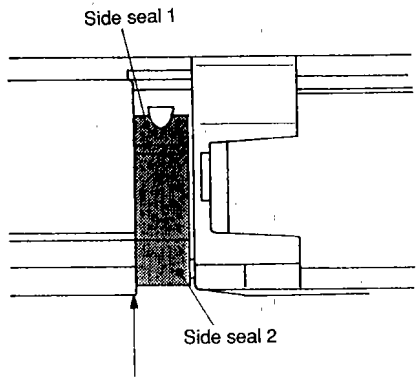


Figure 4-614

VII. FIXING SYSTEM

A. Fixing Assembly

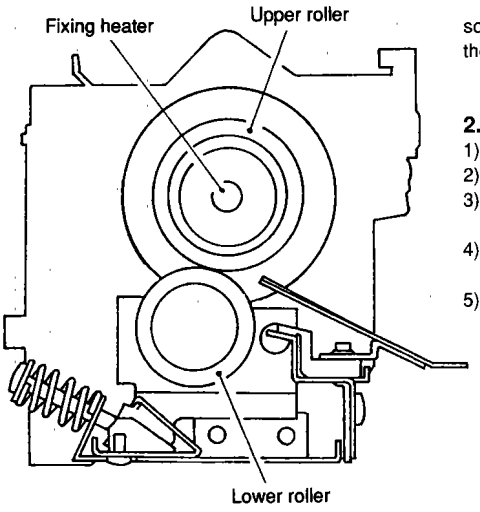


Figure 4-700 Cross Section of Fixing Assembly

1. Engagement Mechanism

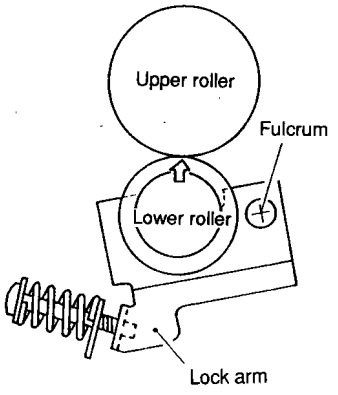


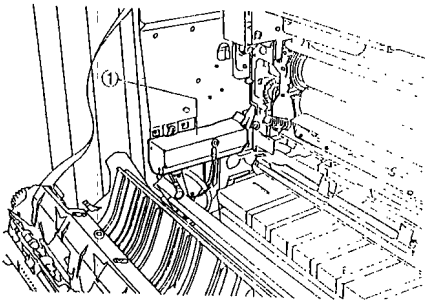
Figure 4-701

The position of the lock arm shown in Figure 4 701 can be changed by turning the pressure adjusting screws found in front of and at the rear of the fixing assembly.

A clockwise turn of the pressure adjusting screw moves the lower roller into the direction of the arrow, thereby increasing the roller pressure.

2. Detaching the Fixing Assembly

1) Open the front door.
2) Detach the delivery assembly.
3) Remove the screw from the tape on the delivery assembly support.
4) Remove the screw, and detach the fixing assembly knob.
5) Remove the screw, and detach the connector cover.



① Connector cover

Figure 4-702

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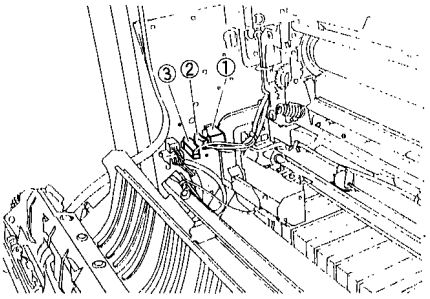
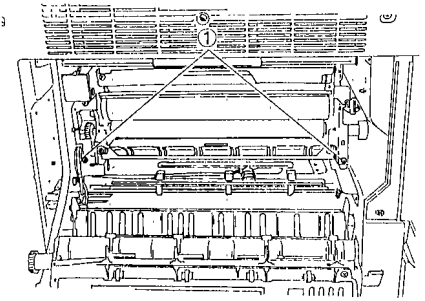
6) Disconnect J64, J76, and J83.



① J83
② J76
③ J64

Figure 4-703

7) Remove the two screws, and slide out the fixing assembly.

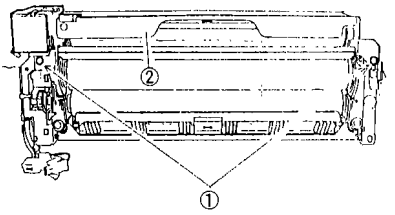


① Screws

Figure 4-704

3. Detaching the Heater, Upper Roller, and Lower Roller

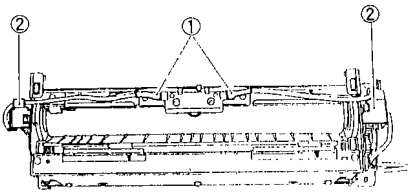
1) Detach the fixing assembly.
2) Remove the two screws, and detach the fixing cleaning assembly.



① Screws
② Fixing cleaning assembly

Figure 4-705

3) Remove the screws (1 pc. each), and detach the four harness retainers; then, detach the tiewrap.
4) Pull out the two fastons from the thermoswitch.
5) Remove the screws (2 pcs. each), and detach the heater mount (front, rear); then, pull out the heater.



① Fastons
② Heater mount

Figure 4-706

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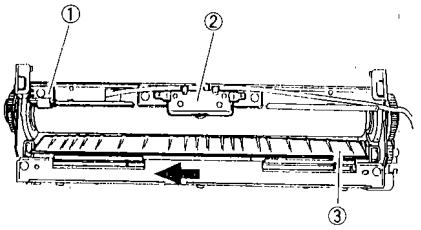
6) Remove the screw, and detach the thermistor.
7) Remove the two screws, and detach the thermoswitch.
8) Wiggle the paper guide into the direction of the arrow to detach.



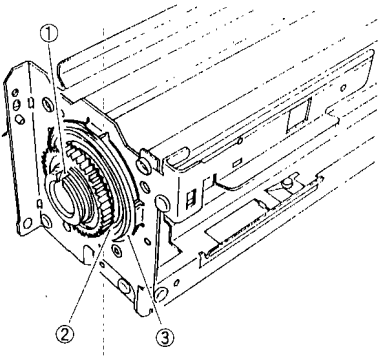
① Thermistor
② Thermoswitch
③ Paper guide

Figure 4-707

9) Remove the C-ring at the front, and detach bearing together with the insulation bushing.

Note:

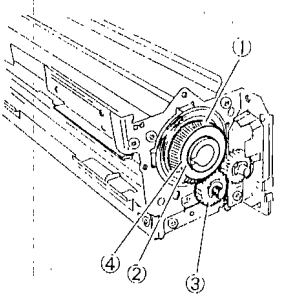
Handle the insulation bushing with care; it fragile.



① C-ring
② Insulation bushing
③ Bearing

Figure 4-708

10) Remove the C-ring, and detach the roller shaft gear and the electrode sliding plate at the rear.



① Roller shaft gear
② C-ring
③ Drive gear
④ Electrode sliding plate

Figure 4-709

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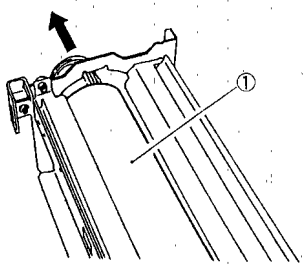
11) Remove the E-ring, and detach the drive gear.
12) Detach the bearing at the rear, and pull out the upper roller while pushing it against the lower roller.



① Upper roller

Figure 4-710

13) Lift the lower roller off the bearing to detach.

4. Attaching the Heater

- Do not touch the surface of the heater with bare hands.
- Attach it so that the connector is at the rear or the print of the manufacturer's name is at the front.

5. Attaching the Upper Roller

Attach the upper roller so that the shorter of the cut-offs is located at the rear. For the orientation of the insulation bushing, see Figure 4-711.

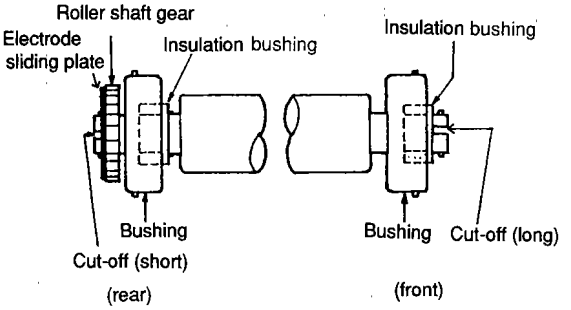


Figure 4-711

6. Attaching the Thermistor and the Thermoswitch

a) Make sure that the sensor face of the thermistor is in even contact with the surface of the upper roller.

Note:

The position of the thermistor need not be adjusted; if the contact is not even, check to make sure that the leaf spring is not deformed and the lead wire is pulled taut.

b) Attach the thermoswtich using two screws.

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7. Measuring and Adjusting the Nip Width

a. Adjustment (adjusting the pressure adjusting screws).

The nip width need not be adjusted if it is with in the standards shown in Table 4-700; otherwise, adjust it using the adjusting bolts.

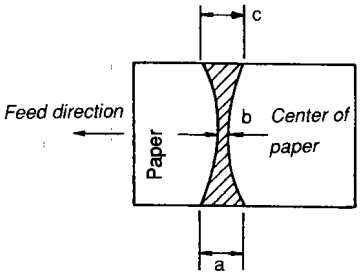

Figure 4-712

Note:

a and c represent points 10 mm from both ends of the paper.

Distance	Measurements*
b	4.5 ± 0.5 mm
| a-c |	0.5 mm or less

Table 4-700

b. Measurement

If the rollers are cool, wait about 15 min afte the wait-up period is over; then, make 20 copies, and take measurements.

1) Lift the copyboard cover, and make a solid black copy (A3).
2) Switch the machine OFF as soon as the leading edge of the copy paper comes out to the copy tray, and open the front door.
3) Wait 15 sec, and the fixing assembly knob clockwise slightly; them, turn the knob further to remove the paper.
4) Measure the width of the section shown in Figure 4-712; the toner on the section should be shiny.

8. Position of Paper Guide

The paper guide may be detached by sliding it to the front; it may be attached by reversing the step.

The position of the paper guide need not be adjusted.

Note:

Do not loosen the fixing screw on the paper guide mount; the position of the paper guide must be adjusted if the paper guide mount has been detached. If it must be removed for an unavoidable reason, mark its position on the fixing assembly mount using a scriber

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Note:

To adjust the position of the paper guide, place the fixing assembly on the edge of the desk as shown in Figure 4-713. Make sure the lower fixing unit screws are against the desk's edge. Adjust the paper guide mount to the distance of 48mm.

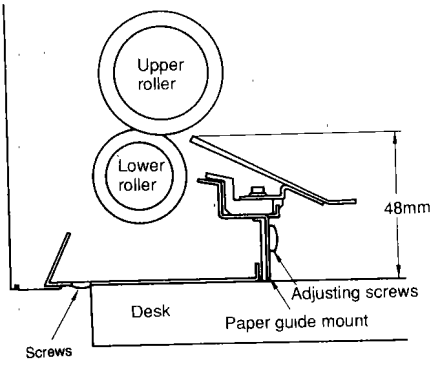


Figure 4-713

9. Lubrication

Apply heat-resisting grease (CK-0427) over the following on a periodical basis.

- gear engagement (rear)
- engagement between fixing assembly knob and gear (front)

B. Fixing Cleaning Assembly

1. Outline

The fixing cleaning assembly is located above the fixing assembly and is used to clean the surface of the upper roller with a cleaning belt impregnated with silicone oil.

The cleaning belt is 15 m in length; a red band is printed on the belt 2.5 m from its end.

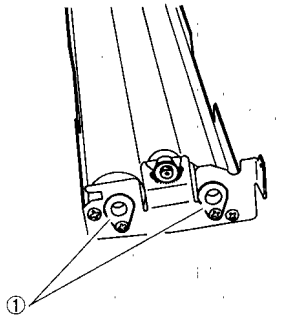
Note:

Be sure to clear 'WEB' in the counter mode (service mode) after each replacement of the belt.

2. Disassembly and Assembly

a. Detaching the Cleaning Belt

1) Detach the fixing assembly.
2) Remove the mounting screw, and detach the fixing cleaning assembly.
3) Remove the screw (1 pc. each), and detach the two bushings of the fixing cleaning assembly; then, detach the cleaning belt.



① Bushings

Figure 4-714

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b. Attaching the Cleaning Belt

The service parts of the cleaning assembly consist of the feed shaft, take-up shaft, and the belt, all constructed as a single entity. To attach the cleaning belt, reverse the steps given for its detachment with the following in mind:

- Wind the cleaning belt on the take-up shaft until a red band (start mark) is in view. At the time, check to make sure that the section in contact with the roller is moist with oil.

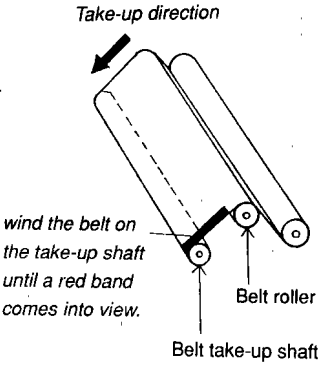

Figure 4-715

Note:

Make sure that the cleaning belt is not askew and is free of slack and wrinkles.

c. Position of the Cleaning Belt Drive Solenoid (SL2)

Attach the solenoid so that the section shown in Figure 4-716 is 0.3 ± 0.1 mm when the lever is moved into the direction of A.

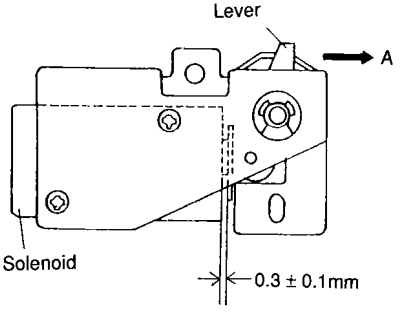

Figure 4-716

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VIII. ELECTRICAL

A. DC Controller

The DC controller is equipped with a built-in battery (BAT101). Take note of the following, as shorting both terminals of the battery will result in overheating:

1. When Detaching the DC Controller

- Detach it together with the shield plate.

2. When Replacing the DC Controller

- Keep the DC controller and the shield plate intact and put them in a conductive bag when sending the controller to the repair facility or to the factory. The conductive bag must have a transparent side so that the face side of the DC controller can be seen through the bag.
- Be sure to make adjustments and enter settings in the service mode and re-enter the user mode settings after each replacement.

B. Lithium Battery

CAUTION

Replace the lithium battery only with the one listed in the Parts Catalog.

Use of another battery may present a risk of fire or explosion.

The battery may present a fire or chemical burn hazard if mishandled. Do not recharge, disassemble or dispose of it in fire.

Keep the battery out of reach of children and discard used battery promptly.

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I. CHOOSING THE SITE

It is important to keep the following in mind; if possible, visit the user in advance.

- Make sure that the site is kept between 7.5° and 32.5 °C and its humidity is between 10% and 85%; avoid areas near water faucets, water boilers, humidifiers, and refrigerators.
- An AC power outlet that can be used exclusively for the copier and capable of providing the rated voltage should be available.
- Avoid open fires or areas subject to dust or ammonium gas; avoid direct sunlight* and install curtains if necessary.

**Exposure to direct sunlight can disrupt the auto paper selection and auto reproduction selection mechanisms.*

- Make sure that the room is well ventilated.
- Although the level of ozone generated by the machine will not affect the health of the individuals, some may find it unpleasant.
- Make sure that the pedestal's feet are in contact with the floor.
- Keep the machine at least 10 cm away from any wall, and provide space for access.

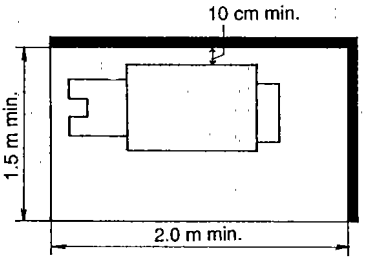

Figure 5-1

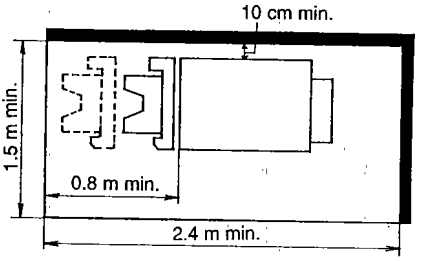

Figure 5-2 (w / sorter)

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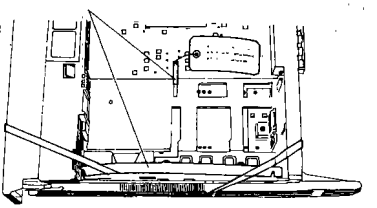
II. UNPACKING AND INSTALLATION

When a piece of metal is brought in from a cold place to a warm room, droplets of water can form on its surface. This phenomenon is called *condensation,* and copiers suffering condensation may fail to produce images. If condensation is expected, leave the machine alone without unpacking for one hour or more and start the work after it has fully used to the room conditions.

A. Unpacking

Step	Work	Remarks
1	Open the shipping box.	Check that all of the following are set in the main body. · Cassette (The size or number varies by specification.)
2	Open the shipping box, and take out the parts and accessories.	Check that all of the following are available: · Drum unit · Copy tray · Document stand (mounting screw; 2, M4X20) · Operator's Manual · Installation check list
3	Slide out four hand grips from the machine; lift the machine, and place it on the pedestal.	See the respective INSTALLATION PROCEDURE when installing the Cassette Feeding Unit or the Paper Deck Pedestal.
4	Slide out the cassettes, and remove the tape and fixing members.	Fixing members lifting plate (cassette) 

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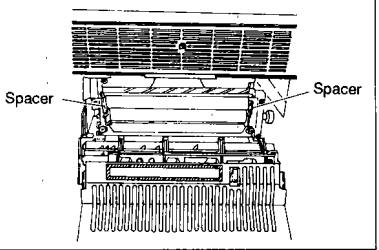
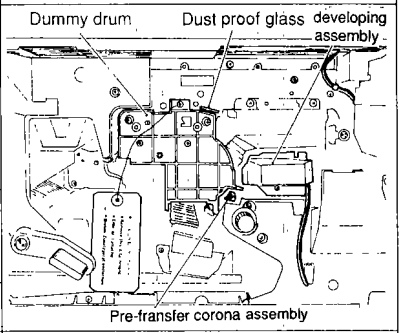
Step	Work	Remarks
5	Open the front door, open the delivery assembly, and remove the spacers (front, rear; 1 each).	
6	Close the delivery assembly.	
7	Swing open the hopper to the front, and release the feeder assembly; then, remove the mounting screw, and take out the dummy drum. *Keep the screw; use it when attaching the drum unit.*	
8	Detach the dust-proof glass, and dry wipe it using lint-free paper. Attach the dust-proof glass back on.	
9	Detach the pre-transfer corona assembly, and clean the corona wire.	
10	Remove the developing unit by first removing the screw, and disconnect the connector; then detach the developing assembly, and check that the developing cylinder is not soiled.	Do not touch the surface of the developing cylinder; make sure no foreign matter is found on the surface.
11	Re-insert the developing assembly and the pre-transfer corona assembly.	Keep the feeder assembly released.
12	Remove all fixing tape	

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B. Switching the Copier ON

Step	Work	Remarks
1	Connect the power plug into the outlet; then, insert the door switch actuator into the door switch assembly, and switch the copier ON.	• Check that the ADD PAPER message is indicated. • Press the numeric keypad and CLEAR key, and check that the indicated copy count is correct.
2	Put black toner into the hopper	See "Adding Black Toner" in CHAPTER 1.
3	Set the hopper in the copier.	
4	Wait until the warm-up period is over; then, press the service mode switch using a hexagon key. • Select 'TONER-S (F031)' in the service mode (✳ 4 ✳), and press the ✳ key.	The copier operates for about eight minutes, during which the developing assembly is supplied with toner from the hopper. Note: DO NOT switch the copier OFF or pull out the door switch actuator while the copier is operating. While the developing assembly is being supplied with toner, steps 5, 6, and 7 may be executed.
5	Enter settings for the asterisk mode and the user options mode as desired by the user.	Enter settings for the users option mode in the service mode (✳ 5 ✳).
6	Re-size the cassette as desired by the user; then, set paper, and set the cassette in the copier.	• See the instructions in "RE-SIZING THE CASETTE." • Check that the ADD PAPER message goes OFF.
7	Attach the documment tray and copy tray.	See "Attaching the Document Tray."
8	Wait until the supply operation is over; then, open the hopper.	
9	Check that the developing assembly is disengaged.	If the developing assembly is at the point of engagement, select 'DEV-REL' in the service mode (✳ 4 ✳), and press the ✳ key; the developing assembly will move and become disengaged.
10	Switch the copier OFF.	
11	Insert the drum unit, and fix it in place using the screws that held the dummy drum in place.	• Take care not to damage the surface of the drum when handling the drum unit; work efficiently so that the drum will not be exposed to light for a long time. • The drum separation claw will be disengaged automatically when the drum unit is inserted; do not touch the drum separation claw. • Make sure that the drum separation claw is in contact with the drum after attaching the drum unit.
12	Set the feeder assembly and hopper.	

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C. Checking the Images and Operations

Step	Work	Remarks
1	Switch the copier ON.	
2	Set the Test Sheet on the copyboard, and make a copy.	Make sure that there is no abnormal noise.
3	Install the CD unit if needed.	See the CD Unit Installation Procedure.
4	Check that the copy images and the copying operations are normal.	• Black copy • Two-sided copy (NP3050 only) • Overlay copy (NP3050 only) • Manual feed copy • Fixed ratio copies If the copy images are not correct, make adjustments following the IMAGE ADJUSTMENT BASIC PROCEDURE. • Make sure that the document size is identified correctly.
5	Pull out the door switch actuator, and close the front door.	
6	Check that the external covers are free of scratches and deformations.	
7	Clean the site of installation.	
8	Move the machine to the site.	Check that the machine is level.
9	Fill out the Service Sheet.	

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III. RELOCATING THE MACHINE

If the machine needs to be relocated by truck or other means of transportation, go through the following:

Step	Work	Checks	Remarks
1	Detach the drum unit.	Keep the drum unit in a box.	
2	Detach the CD unit, : if attached.	Keep the CD unit in a box.	
3	Attach the dummy drum.		
4	Tape the corona assemblies, feeder assembly release lever, and lower feeder assembly release lever in place to protect against vibration.		
5	Tape the front door and delivery assembly door in place.		
6	Place a sheet of A3 or LGR paper on the copyboard glass, and tape the copyboard cover in place.		

Note:

If the machine must be lifted when loading onto a truck, be sure to detach the machine from the cassette feeding unit.

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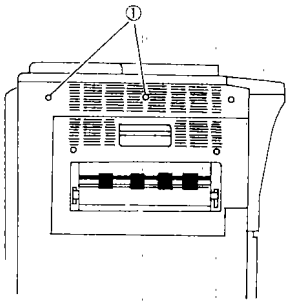
IV. ATTACHING THE DOCUMENT TRAY

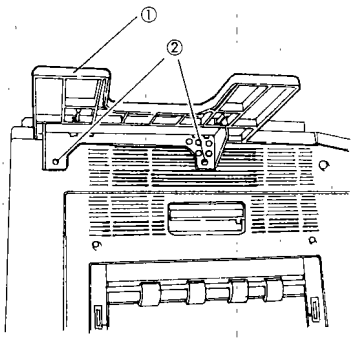
1) Remove the two screws from the left cover.



① Screws (Two screws will not be used.)

Figure 5-3

2) Attach the document tray



① Document tray
② Mounting screws (accessories)

Figure 5-4

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V. RE-SIZING THE CASSETTE

The cassette may be re-sized as needed by moving the rear quide plate, spring, and the face plate of the lifting plate.

① Re-sizing the Cassette

1) Turn over the cassette, and remove the screw that holds the rear guide plate in plase.

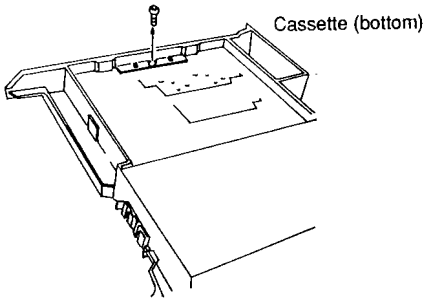

Figure 5-5 Bottom of Cassette

2) Relocate the rear guide plate in reference to the index on the bottom, and fix it in place using a screw; see Table 5-1.

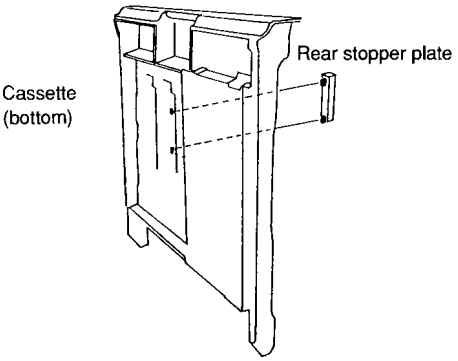

Figure 5-6

Copy paper	Size	Rear stop plate
A3	297mm×5420mm (11.7"×16.5")	A3
11×17	297mm×432mm (11"×17")	11×17
A4	297mm×210mm (11.7"×8.3")	A4
Letter	279mm×216mm (11.0"×8.5")	LTR
Government Letter	267mm×203mm (11.7"×58.3")	G.
Korean	265mm×190mm (10.4"×7.5")	K.
B4	257mm×364mm (10.1"×14.3")	B4
Legal	216mm×356mm (8.5"×14.0")	LGL
B5	257mm×182mm (10.1"×7.2")	B5
Argentine Letter	280mm×220mm (11.0"×8.7")	Arg.
A4-R	210mm×297mm (8.3"×11.7")	A4 R
Lettre-R	216mm×279mm (8.5"×11.0")	LTR R
B5R	182mm×257mm (7.2"×10.1")	B5 R
Argentine Legal	220mm×340mm (8.7"×13.4")	Arg. LGL
Government Letter-R	203mm×267mm (8.0"×10.5")	G. R
Government Legal	203mm×330mm (13.0"×8.0")	G. LGL
Argentine Letter-R	220mm×280mm (8.7"×11 0")	Arg. R
Foolscap	216mm×330mm (8.5"×13")	FLS
Folio	210mm×330mm (8.3"×13")	FOLIO
Australian Foolscap	206mm×337mm (8.1"×13.3")	Aus FLS
Korean-R	190mm×265mm (7.5"×10.4")	K. R
Officio	216mm×317mm (8.5"×12.5")	OFC
Ecuadorean Officio	220mm×320mm (8.0"×10.5")	E.
Bolivian Officio	216mm×355mm (8.5"×14.0")	BLV

Table 5-1

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■ B4, A4R, LGL, ARG-R, 11X17, LTR-R, FLS, G-R, FOLIO, G.LGL, AUS. FLS, BLV, ARG. LGL, E., OFC.
For the above sizes, use two rear guide plates; for locations, use the Index on the bottom of the cassette.

Note:

For which spring to use, see "Replacing the Spring."

3) Detach the side stop plates from both cassettes.

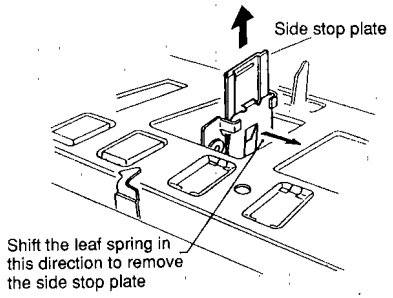

Figure 5-7

4) Remove the screws that hold the partition plate.

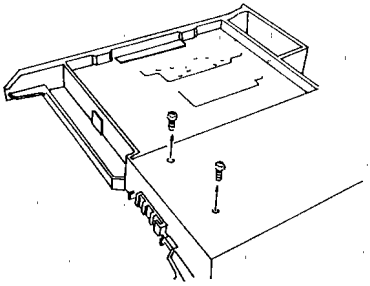

Figure 5-8

5) Slide the partition plate to suit the desired paper size using the index on the bottom of the cassette.

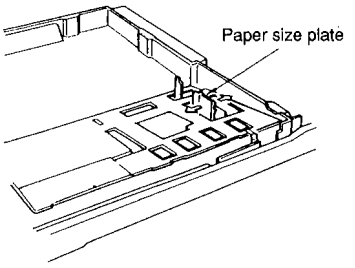

Figure 5-9

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6) Place about 100 sheets of paper of the desired size in the cassette; use paper fresh out of the package, and butt it against the front.
7) Put the side stop plate between the paper and the partiton plate; then butt the partition plate against the slide stop plate, and fix it in place using a screw.

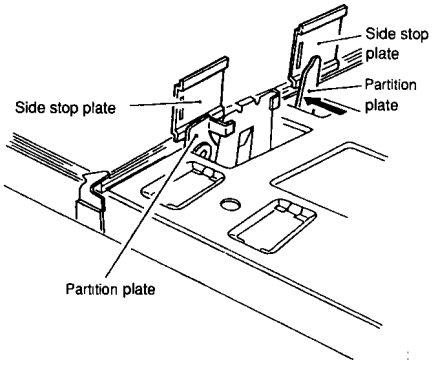

Figure 5-10

8) Attach the side stop plate back in its original position.

9) Set the cassette size tabs as shown in Table 5-2.

	1	2	3	4
B5				■
U-L2			■	
A4			■	■
B5 R		■		
B4		■		■
A4 R		■	■	
A3		■	■	■
U-S1	■			
U-S2	■			■
U-L1	■		■	
Letter	■		■	■
STMT	■	■		
Legal	■	■		■
Letter R	■	■	■	
11"×17"	■	■	■	■

* U-L1, U-L2 ··· Argentine - LEGAL,Foolscap, Govement - LEGAL,Folio, Aus.Foolscap OFFICIO, Ecuadorean OFFICIO Bolivian OFFICIO

U-S1, U-S2 ··· Govement - LETTER, Argentine - LETTER,Korean Ledger

Table 5-2

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10) Set the face plate on the lifting plate as shown in Table 5-3.

Paper	Lifter plate and Blanking plate
A3	ⓐ ⓑ ⓒ ⓓ
11 x 17	ⓐ ⓑ ⓒ ⓓ
A4	ⓐ ⓑ ⓒ ⓓ
LETTER	ⓐ ⓑ ⓒ ⓓ
Argentine-LETTER	ⓐ ⓑ ⓒ ⓓ
Government-LETTER	ⓐ ⓑ ⓒ
Korean	ⓐ ⓑ ⓒ
B4	ⓐ ⓑ ⓒ
B5	ⓐ ⓑ ⓒ
A4-R	ⓐ ⓑ
LETTER-R	ⓐ ⓑ
Argentine-LEGAL	ⓐ ⓑ
Government-LETTER-R	ⓐ ⓑ
Government-LEGAL	ⓐ ⓑ
Argentine-LETTER-R	ⓐ ⓑ
Foolscap	ⓐ ⓑ
Folio	ⓐ ⓑ
Aus-Foolscap	ⓐ ⓑ
OFICIO	ⓐ ⓑ
Ecuadorean OFICIO	ⓐ ⓑ
Bolivian OFICIO	ⓐ ⓑ
LEGAL	ⓐ ⓑ
Korean Ledger-R	ⓐ
B5R	ⓐ

Table 5-3

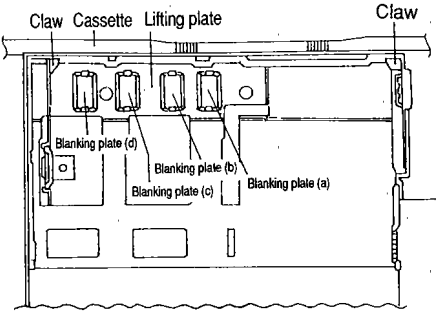

Figure 5-11 Top View Cassette

11) Attach the size label on the cassette.
- If necessary, use a blank label and write the size on it.

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② Replacing the Cassette Spring
Replace the cassette spring as shown in Table5-4 to suit different paper sizes.

Paper size	Color of spring
A4 / A3 11 x 17 / LTR / I	green
A4R / B5R / LTR-R LGL / STMT / II	yellow
B4 / B5	red

Table 5-4

I. ARGENTINE LTR
GOVERNMENT LTR
KOREAN
II. ARGENTINE LGL
GOVERNMENT LGL
ARGENTINE LTR-R
GOVERNMENT LTR-R
FOOLSCAP FOLIO
AUSTRALIAN FOOLSCAP
KOREAN-R
ECUADORAN OFICIO
BOLIVIAN OFICIO

1) Remove the two rubber stops from the lifting plate.

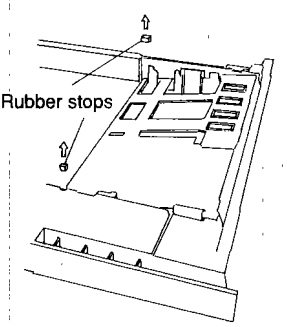

Figure 5-12

2) Detach the lifting plate and the spring.

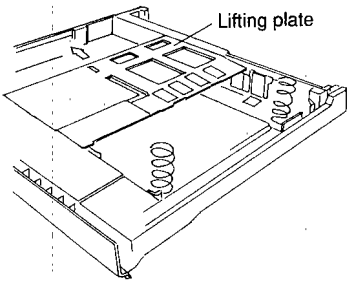

Figure 5-13

3) Replace the spring; refer to Table 5-4.
4) Attach the lifting plate, and attach the rubber stops.

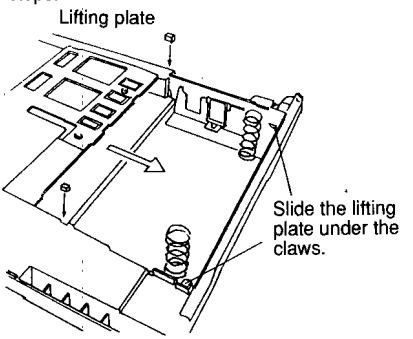

Figure 5-14

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Points to Check
- Make sure that the rubber stops are attached properly.
- Make sure that the spring at the rear is set to the spring seat found behind the lifting plate.

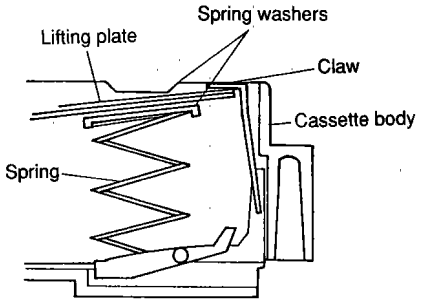

Figure 5-15

③ Detaching the Pick-Up Roller
If the cassette has been modified to accommodate Government Letter, Korean Government, or Korean Government-R, detach the pick-up rollers shown below.

- If Government LTR or Korean Government,

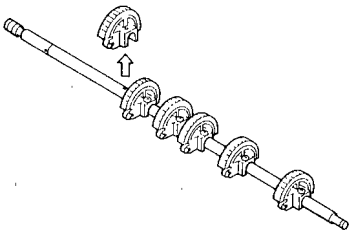

Figure 5-16

- If Korean Government-R,

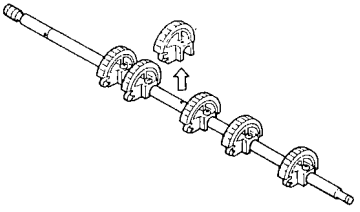

Figure 5-17

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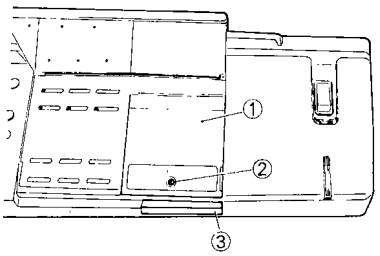
VI. ATTACHING CONTROL CARD V

1) Open the front door.
2) Detach the control panel.
3) Detach the MODE MEMO label.
4) Remove the fixing screw from the blanking cover.

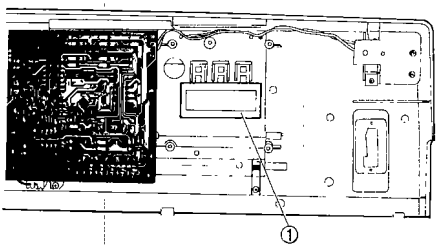


① Blanking cover
② Mounting screw
③ Blanking plate

Figure 5-18

5) Turn over the control panel, and detach the blanking plate.

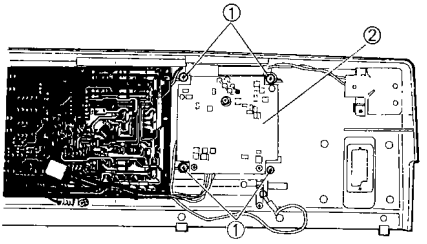
6) Detach the protective sheet from the Control Card V indicator.
7) Place the transparent sheet over the opening in control panel.



① Transparent sheet

Figure 5-19

8) Fix Control Card V on the control panel using four mounting screws.
At the time, insert a card into Control Card V, and fix Control Card V at a point where the card may be slid in and out smoothly.



① Holes for mounting screws
② Control card V

Figure 5-20

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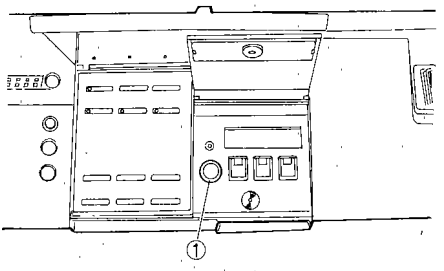
Make sure that the printer connector is centered over the hole.



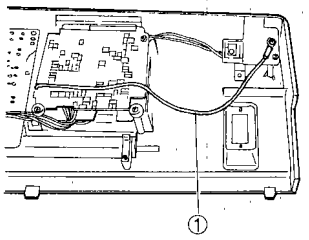
① Connector for printer

Figure 5-21

9) Attach the grounding wire for Control Card V.

Note:

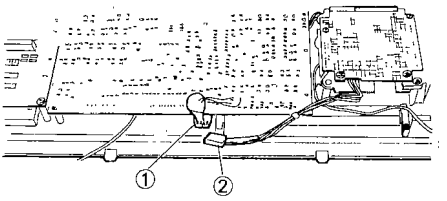
Keep the grounding wire away from the DC harness as far as possible.



① Grounding wire

Figure 5-22

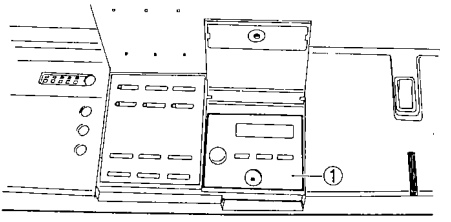
10) Disconnect the shorting connector shown in Figure 5-23.
11) Connect the 4P connector of Control Card V and the 4P connector on the machine side.



① Shorting connector ② 4P connector

Figure 5-23

12) Attach the control panel to the machine.
13) Detach the protective sheet from the control panel label of Control Card V.
14) Attach the control panel label of Control Card V on the control panel of the machine.



① Label

Figure 5-24

15) Attach the MODE MEMO label removed in step 3).
16) Switch the machine ON, and check the operation of Control Card V.

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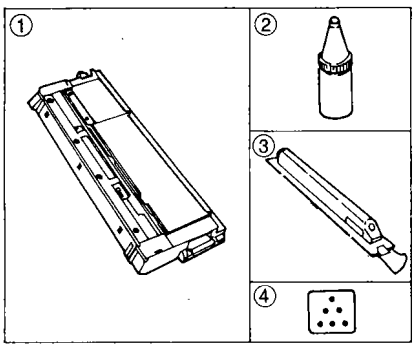
VII. INSTALLING THE CD UNIT (NP3050 only)

A. Unpacking

Unpack the CD unit, starter, and toner cartridge, and make sure that the following are available:



① CD unit	1 unit
② Starter	1 pc.
③ Toner cartridge	2 pcs.
④ Color toner label	1 pc.

Figure 5-25

B. Installing the CD Unit

1) Open the machine's front door, and insert the door switch actuator into the door switch assembly; then, switch the machine ON.

■ Skip steps 2) through 4) if the unit will be used for red.

2) Remove the two screws, and detach the front cover of the CD unit.

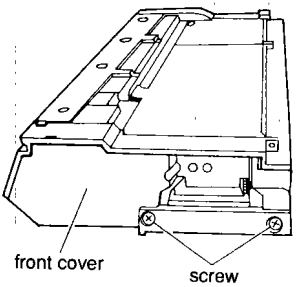


Figure 5-26

3) Cut the lead wires of the resistors (JP851, JP852) on the PCB to suit the color of the toner.

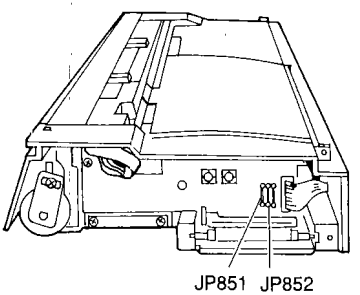


Figure 5-27

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	JP851	JP852
Red	—	—
Blue	Cut	—
Green	—	Cut
Brown	Cut	Cut

Table 5-5

4) Attach the front cover of the CD unit.
5) Attach the color toner label on the front cover.
6) Remove the four screws, and detach the top cover of the CD unit.

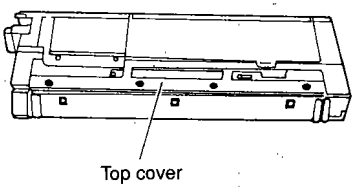

Figure 5-28

7) Shake the starter container lightly up and down about ten times.
8) Turn the supply mouth of the starter container counterclockwise to remove.

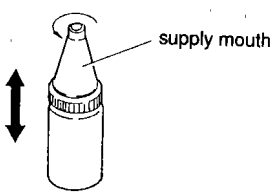

Figure 5-29

9) Detach the seal of the starter container.

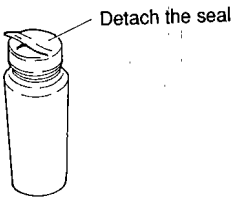

Figure 5-30

10) Attach the supply mouth to the starter container.
11) Pour the starter into the developing cylinder of the CD unit evenly.

Note:

Take care not to spill the starter; a lack of starter can result in foggy copies.

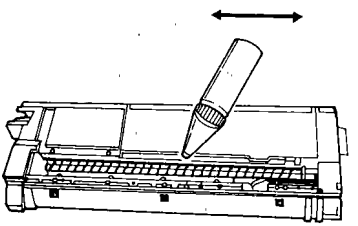

Figure 5-31

12) Attach the top cover to the CD unit.

Note:

Tighten the mounting screws in the order shown in Figure 5-30.

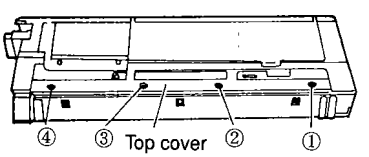

Figure 5-32

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13) Check that the machine is in the standby mode; if in WMUP, wait until it is in the standby mode.
14) Detach the rail cover of the machine, if any.
15) Check that the black developing assembly is engaged, and set the the CD unit in the machine.
16) Check that VR852 (fine adjustment) is centered.

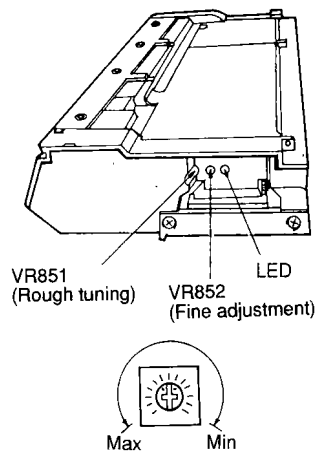

Figure 5-33

17) Push the machine's service mode switch using a hexagon key or the like.
· The machine enters the service mode and indicates '$' on the message display.
18) Press ⊠ 4 and then ⊠ .
· The machine enters the function mode.
19) Press the COPY DENSITY key, and select 'CD-ROT'.
20) Press ⊠ , the CD unit becomes engaged, and the cylinder rotates.

Note:

Wait for 30 seconds after pressing ⊠ ; then, go to the next step.

21) Insert a screwdriver through the hole in the front plate, and turn VR851 (CD unit, rough tuning) until the LED goes ON.

Note:

· Exercise care; the CD unit will automatically disengage itself after 3 minutes.
· If the LED flashes and, therefore, adjustment is difficult, turn VR852 (fine tuning); however, keep VR852 centered if possible, and make use of VR851.

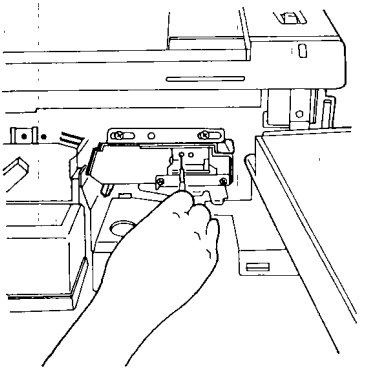

Figure 5-34

22) Press ⊠ to stop the rotation of the cylinder.
23) Check that the main motor has stopped rotating; then, press the RESET key twice to leave the service mode.
24) Shift up the CD unit support plate on the machine side, and slide out the CD unit.

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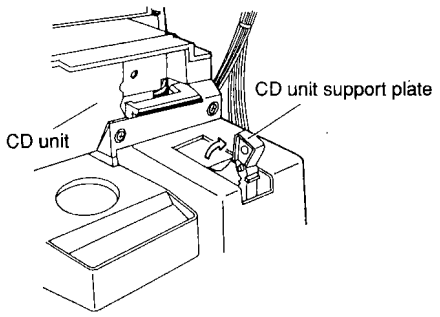

Figure 5-35

25) Disengage the two locks, and open the toner supply mouth cover of the CD unit.
26) Shake the toner cartridge left and right several times to even out the toner.
27) Set the toner cartridge in the CD unit.
28) Pull out the seal horizontally until the 'STOP' mark comes into view while holding the cartridge.
29) Tap on the top of the cartridge lightly.
30) Hold the tab on the cartridge, and detach the cartridge while holding the CD unit.
31) Close the toner supply mouth cover, and fix it in place by engaging the two locks.
32) Set the CD unit in the machine.
33) Pull out the door switch actuator.
34) Close the front door, make color copies, and check the images.

Note:

Keep the box for the CD unit for future storage.

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I. PERIODICALLY REPLACED PARTS

Some parts of the machine must be replaced on a periodic basis to maintain the machine's original performance; replace them as shown even if they do not show signs of wear or damage. Arrange the replacement so that it coincides with a scheduled visit.

as of sept., 1991

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Corona wire (primary, pre-transfer, transfer, separation)	FY3-0030-000	–	40,000	100V
		FY3-0040-000	–	40,000	115V/230V
2	Pre-transfer corona assembly	FG1-8040-040	1	100,000	
3	Ozone filter (heat exhaust fan)	FA6-9582-000	1	100,000	or 1 yr.
4	Ozone filter (feeder fan)	FA6-9264-000	1	100,000	or 1 yr.
5	Side seal (black developing assembly)	FA5-2606-000	2	200,000	
6	Side spacer (black developing assembly)	FA3-8586-000	2	200,000	
7	Roll (black developing assembly)	FS2-6019-000	2	500,000	
8	Side seal (CD unit)	FA5-2720-000	2	200,000*	
9	Stopper roll (CD unit)	FS2-6004-000	2	200,000*	
10	Filter (scanner cooling fan)	FC1-4217-000	1	200,000	or 1 yr.

* Copies produced using the CD unit.

Note:

The above values are estimates only and are subject to change based on field data.

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II. DURABLES

Some parts of the machine may become worn or damaged over the machine's warranty period; replace them as necessary.

A. Machine Body

as of June, 1991

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Scanning lamp	FH7-3113-000	1	100,000	100/115V
		FH7-3114-000	1	100,000	230V
2	Corona wire cleaner (transfer/separation assembly)	FF5-0940-000	1	100,000	
3	Drum separation claw	FA3-8577-030	4	100,000	
4	Lower roller cleaner (fixing assembly)	FF2-0175-020	1	100,000	
5	Pick-up roller (pick-up assembly)	FA6-5547-000	12	200,000	if LTR, 10 pcs.
6	Pre-exposure lamp	FH7-3220-000	1	200,000	
7	Upper roller (fixing assembly)	FA6-3024-040	1	200,000	
8	Lower roller (fixing assembly)	FA6-3921-000	1	200,000	
9	Upper separation claw (fixing assembly)	FA9-0451-000	4	200,000	
10	Lower separation claw (fixing assembly)	FA2-9037-000	4	200,000	
11	Insulating bush (fixing assembly)	FB1-5928-000	2	200,000	
12	Cleaning belt (fixing assembly)	FA3-8908-000	1	200,000	
13	Upper registration roller	FF2-2212-020	1	300,000	
14	Lower registration roller	FF2-5089-000	1	300,000	
15	Blank exposure lamp	FH7-3240-000	1	300,000	
16	Developing cylinder (black developing assembly)	FA5-2594-000	1	300,000	
17	Developing assembly drive gear (black developing assembly)	FS3-0565-000	1	300,000	
18	Thermistor (fixing assembly)	FH8-7207-000	1	300,000	
19	Vertical path roller	FA6-3836-000	2	300,000	
20	Scanner drive cable	FA6-9295-000	1	500,000	
21	Halogen heater (fixing assembly)	FH7-4318-000	1	500,000	100V
		FH7-4319-000	1	500,000	115V
		FH7-4320-000	1	500,000	230V
22	Upper roller bearing (fixing assembly)	XG9-0181-000	2	500,000	
23	Lower roller bearing (fixing assembly)	XG9-0200-000	2	500,000	

Note:

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B. CD Unit (NP3050 only)

as of June, 1991

No.	Parts name	Parts No.	Q'ty	Life (copies) *	Remarks
1	ATR window	FA5-2672-000	1	50,000	
2	Starter (red)	F41-6012-000	1	50,000	
	Starter (green)	F41-6022-000	1	50,000	
	Starter (blue)	F41-6032-000	1	50,000	
	Starter (brown)	F41-6042-000	1	50,000	
3	Developing cylinder	FA5-2690-000	1	200,000	

Note:
The above values are estimates only and are subject to change based on field data.

C. Cassette Feeding Unit-E1

as of June, 1991

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Pick-up roller	FA6-5547-000	12	200,000	if LTR, 10 pcs.
2	Vertical path roller	FA6-3836-000	2	300,000	

Note:
The above values are estimates only and are subject to change based on field data.

D. Paper Deck Pedestal-D1

as of June, 1991

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Pick-up roller	FA5-2854-020	4	100,000	
2	Feeder roller	FL9-0015-000	2	100,000	
3	Separation roller	FL9-0010-000	2	100,000	
4	Registration roller	FC1-0126-000	1	1,000,000	

Note:
The above values are estimates only and are subject to change based on field data.

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E. Paper Deck Pedestal-E1

No.	Parts name	Parts No.	Qt'y	Life(copies)	Remarks
1	Pick-up roller	FF9-1003-000	2	100,000	
2	Feeder roller	FL9-0015-000	1	100,000	
3	Separation roller	FL9-0010-000	1	100,000	
4	Registration roller	FA5-8434-000	1	300,000	

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III. PERIODICAL SERVICING

Note:

i. As a rule, go over the steps every 20,000 copies.
ii. Check the Service Work Sheet before each visit; take replacement parts if replacement is expected.

Step	Work	Checks	Remarks
1	Meet the person in charge.	Check the condition.	
2	Record the counter reading.	Check the faulty copies.	
3	Make test copies; DIRECT, REDUCE, ENLARGE, two-page separation, two-sided, overlay	a. Image desity b. Background (fogging) c. Character clarity d. Leading edge margin e. Left/Right margin f. Fixing, registration, back (soiling) g. Noise h. Counter	
4	Clean the optical assembly. • Light reflector • Lens • No. 1 through No. 6 mirrors • Dust-proof glass • Blank exposure lamp		Use a blower brush; if the dirt cannot be removed, use alcohol.
5	Clean the corona assemblies. • Corona wire • Grid wire • Shield plate		Dry wipe each using lint-free paper; then, use alcohol.
6	Clean the transfer guide.		Detach the drum unit.
7	Clean the separation/feeder assembly. • Separation claw • Feeder belt • Feeder guide		Clean each; then, attach the drum unit.
8	Clean the fixing/deliver assembly. • Fixing roller (upper, lower) • Inlet guide • Separation claw (upper, lower) • Cleaning belt (check) • Static eliminator		Use cleaning oil.
9	Go over the steps as needed for the number of copies made.		
10	Clean the copyboard cover and the copyboard glass.		Use solvent.
11	Make test copies.		
12	Make sample copies.		
13	Keep the sample copies in order, and clean up the site.		
14	Fill out the Service Sheet, and report to the person in charge.		

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IV. PERIODICAL SERVICING CHART

Note:
Do not use solvents or oils other than specified herein.

△ : Clean ● : Replace × : Oil □ : Adjust ◎ : Inspect or clean

Unit	Parts	Servicing intervals					Remarks
		every 20,000	every 40,000	every 60,000	every 100,000	every 200,000	
External	Copyboard glass	△					
	Ozone filter				●		or 1 yr.
	Filter (scanner cooling fan)				●		or 1 yr.
Feeder assembly	Transfer / Separation corona assembly rail			△			Use a moist cloth.
	Transfer guide assembly	△					Use a moist cloth.
	Feeder belt, Feeder assembly mount	△					Use a moist cloth.
	Registration roller (lower)					△	Use alcohol.
Duplexing unit	Re-feed roller / Set-back roller				△		Use alcohol.
Scanner	No. 1 through No. 6 mirrors	△					Use a blower brush; if the dirt cannot be removed, use alcohol.
	Dust-proof glass	△					
	Lens	△					
	Reflector / Side reflector plate (scanning lamp)	△					
	Blank exposure lamp	△					
	Scanner rail			×			Use alcohol; then, apply oil.

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△ : Clean ● : Replace × : Oil □ : Adjust ◎ : Inspect or clean

Unit	Parts	Servicing intervals					Remarks
		every 20,000	every 40,000	every 60,000	every 100,000	every 200,000	
Corona assembly	Corona wire (primary, pre-transfer, transfer, separation)		●				Dry wipe each using lint-free paper; then use alcohol. Do not use water.
	Primary corona assembly grid wire	△					
	Shield plate (pre-transfer)		△				
	Shield plate, (primary, pre-transfer, transfer, separation)	△					
	Pre-transfer corona assembly				●		
Black developing assembly	Roll (front, rear)			△		● EVERY 500,000	Use alcohol.
	Face in contact with copier rail			△×			Use grease.
CD unit* (NP3050 only)	Stopper roller			△		●	Use alcohol.
	Machine rail assembly			△×			Use grease.
Fixing assembly	Fixing roller (upper, lower)	◎					Use cleaning oil (TKN-0464).
	Separation claw (upper, lower)	◎					Use solvent.
	Inlet guide	◎					
	Static eliminating brush	△					Clean it using lint-free paper to remove paper lint.
	Lower roller felt	△					Scrape off the toner.
	Cleaning belt	◎					Check the remainning length.

* For the CD unit, the intervals are based on the number of copies made using the CD unit.

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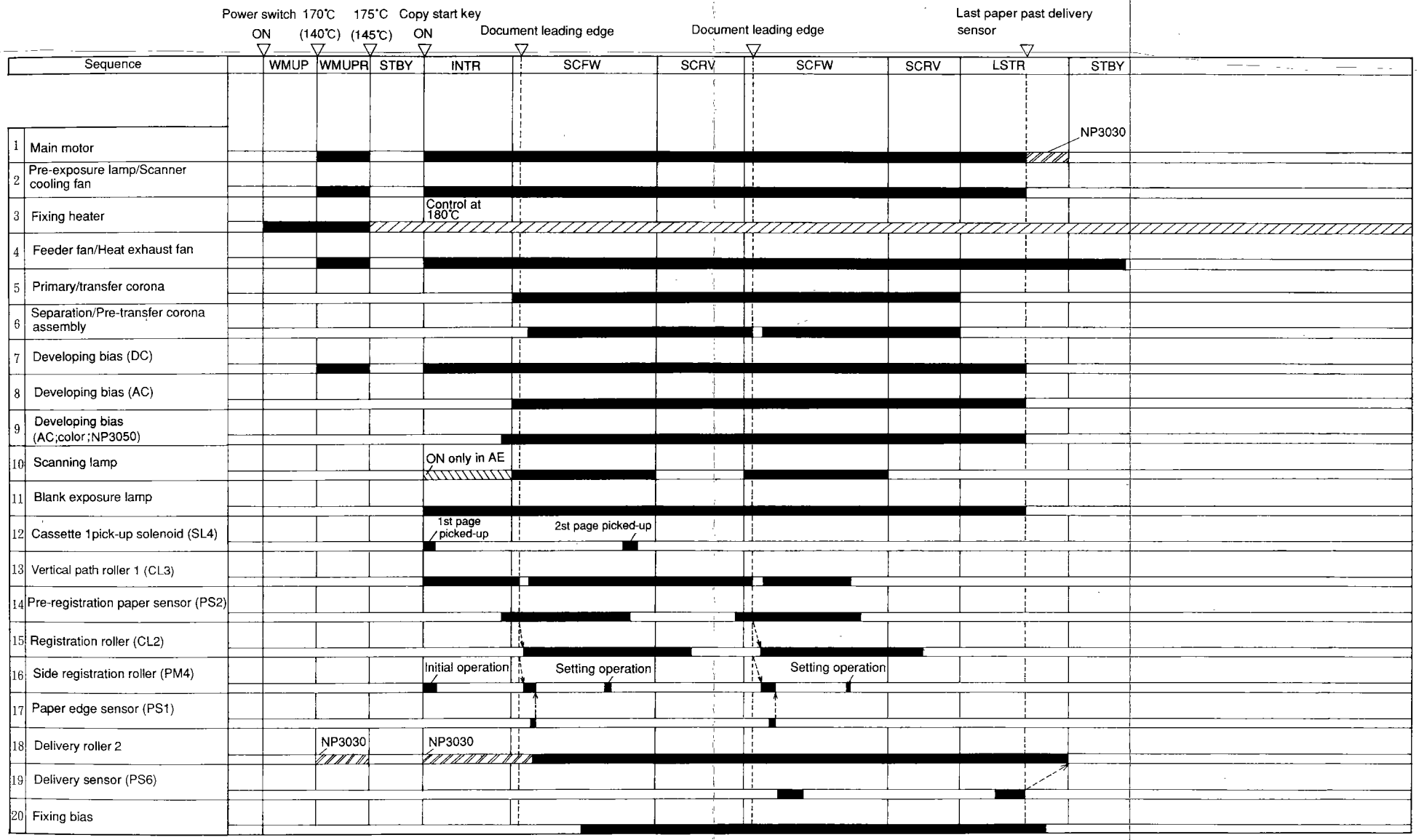
A. GENERAL TIMING CHART

(A4, 2copies, one-side to one-side, pick-up from cassette 1)



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B. LIST OF SIGNALS/ABBREVIATIONS

1. SIGNALS

AEDATA	AE SENSOR OUTPUT signal (analog)
BDPRS	BLACK DEVELOPING ASSEMBLY ENGAGE DETECTION signal
BTEP	BLACK TONER OUT signal
C1PD	CASSETTE 1 PAPER DETECTION signal
C2PD	CASSETTE 2 PAPER DETECTION signal
C3PD	CASSETTE 3 PAPER DETECTION signal
C4PD	CASSETTE 4 PAPER DETECTION signal
BCC	COPYBOARD COVER CLOSED signal
CCD	CONTROL COUNTER DRIVE command
CCDT	CONTROL COUNTER DETECTION signal
CNT1D	COUNTER1 DRIVE command
CLBSD	CLEANING BELT DRIVE SOLENOID DRIVE command
CRGA	CROSS FEED REGISTRATION MOTOR DRIVE PULSE command A
CLBSD	CLEANING BELT DRIVE SOLENOID DRIVE command
CRGA	CROSS FEED REGISTRATION MOTOR DRIVE PULSE command A
CRGB	CROSS FEED REGISTRATION MOTOR DRIVE PULSE command B
CRGPD	CROSS FEED REGISTRATION PAPER DETECTION signal
CRGSTB	CROSS FEED REGISTRATION MOTOR STROBE signal
CT1	COLOR TONER signal 1
CT2	COLOR TONER signal 2
CT3	COLOR TONER signal 3
CTEP1	COLOR TONER OUT signal 1
CTEP2	COLOR TONER OUT signal 2
CTLON	COLOR TONER LED ON command
CTSSD	COLOR TONER SUPPLY SOLENOID DRIVE command
DFA	DELIVERY FEED MOTOR DRIVE PULSE command A
DFB	DELIVERY FEED MOTOR DRIVE PULSE command B
DKMD	DECK MOTOR DRIVE command
DPRSL	DEVELOPING ASSEMBLY PRESSURE SOLENOID DRIVE command
DRGDR	DECK REGISTRATION ROLLER DRIVE command
DRGPD	DECK REGISTRATION ROLLER PAPER DETECTION signal
DRMD	DRUM (MAIN MOTOR) DRIVE command
DSIN	DF SERIAL OUTPUT signal
DSZ1	DOCUMENT SIZE DETECTION signal 1 (analog)
DSZ2	DOCUMENT SIZE DETECTION signal 2 (analog)
DSZ3	DOCUMENT SIZE DETECTION signal 3 (analog)
DSIZE0	DECK SIZE DETECTION signal 0
DSIZE1	DECK SIZE DETECTION signal 1
DSIZE2	DECK SIZE DETECTION signal 2
DSIZE3	DECK SIZE DETECTION signal 3
ECNT	EDITING UNIT CONNECT signal
EXPD	EXIT PAPER DETECTION signal
FMD	FAN MOTOR DRIVE command
FRST	FIXING ROLLER SURFACE TEMPERATURE signal (analog)
HMD	HOPPER MOTOR DRIVE command
HTRD	HEATER DRIVE command
HVAC	AC TRANSFORMER DRIVE command
HVBAC	AC DEVELOPING BIAS DRIVE command
HVBDC	DC DEVELOPING BIAS CONTROL command (analog)
HVPR	PRIMARY CORONA CURRENT CONTROL command (analog)
HVPT	PRE-TRANSFER CORONA CURRENT CONTROL command (analog)
HVSP	SEPARATION CORONA CURRENT CONTROL command (analog)
HVTR	TRANSFER CORONA CURRENT CONTROL command (analog)
LAON	SCANNING LAMP ON signal
LDDE	LEFT DECK DETECTION signal
LFA	LOWER FEED MOTOR 1 DRIVE PULSE command A
LFB	LOWER FEED MOTOR 1 DRIVE PULSE command B
LFENPD	LOWER FEED UNIT ENTER PAPER DETECTION signal
LFEXPD	LOWER FEED UNIT EXIT PAPER DETECTION signal
LHP	LENS HOME POSITION signal
LINT	LIGHT INTENSITY signal (analog)
LNA	LENS MOTOR DRIVE PULSE A command
LNB	LENS MOTOR DRIVE PULSE B command
LNSTB	LENS MOTOR STROBE signal
LLDR	LEET LIFTER DRIVE command
LLPDE	LEET LIFTER POSITION DETECION signal
LPPDE	LEFT PAPER-PATH PAPER DETECTION signal
LPUDR	LEFT PAPER PICK-UP CLUTCH DRIVE command
LPURL	LEFT PAPER PICK-UP RELEASE SOLENOID DRIVE command
LPADE	LEFT DECK PAPER DETECTION signal
LTP	LIFTER POSITION DETECTION signal
MFPD	MANUAL FEED PAPER DETECTION signal
MFSSL	MANUAL FEED ROLLER SOLENOID DRIVE command
MMDP	MAIN MOTOR DRIVE PULSE command
OLED	ORIGINAL SIZE DETECTION LED ON command
PEP3	PRE-REGISTRATION PAPER DETECTION signal
PEP	DECK PAPER DETECTION signal
PEXP	PRE-CONDITIONING EXPOSURE LAMP LIT command
PRCHP	PRIMARY CORONA WIRE CLEANER HOME POSITION signal
PRCH1	PRIMARY CORONA WIRE CLEANER DRIVE command 1
PRCH2	PRIMARY CORONA WIRE CLEANER DRIVE command 2
PRCRD	PRIMARY CORONA WIRE CLEANER REAR POSITION DETECTION signal
PUCD1	PICK-UP ROLLER CLUTCH 1 DRIVE command
PUCD2	PICK-UP ROLLER CLUTCH 2 DRIVE command
PURD	PICK-UP ROLLER DRIVE command
PURL	PICK-UP ROLLER RELEASE SOLENOID DRIVE command
PWOFF	POWER OFF command
RDDE	RIGHT DECK DETECTION signal
RGCL	REGISTRATION ROLLER CLUTCH SOLENOID DRIVE command
RGPD	REGISTRATION PAPER DETECTION signal
RLDR	RIGHT LIFTER DRIVE command
RLUL	RIGHT LIFTER UPPER LIMIT signal
RLPDE	RIGHT LIFTER POSITION DETECTION signal
RPADE	RIGHT DECK PAPER DETECTION signal
RPUDR	RIGHT PAPER PICK-UP CLUTCH DRIVE command
SCCUP	SCANNER MOTOR UP DRIVE command
SCPD	SCANNER POSITION DETECTION signal
SFSL	SEPARATION FLAPPER SOLENOID DRIVE command
SDODE	SIDE DOOR DETECTION signal
SOPEN	SIDE DOOR OPEN signal
TRCHP	Tr./Sp. CORONA WIRE CLEANER HOME POSITION DETECTION signal
TRCM1	Tr./Sp. CORONA WIRE CLEANER DRIVE command 1
TRCM2	Tr./Sp. CORONA WIRE CLEANER DRIVE command 2
TRCRD	Tr./Sp. CORONA WIRE CLEANER REAR POSITION DETECTION signal
WTOF	EXCESS WASTE TONER signal

2. ABBREVIATIONS

INTR	INTIAL ROTATION
LSTR	LAST ROTATION
PRFE	PRE-FEED
SCFW	SCANNER FORWARD
SCRV	SCANNER REVERSE
STBY	STANDBY
WAIT	WAIT
WMUP	WARM UP
WMUPR	WARM UP ROTATION

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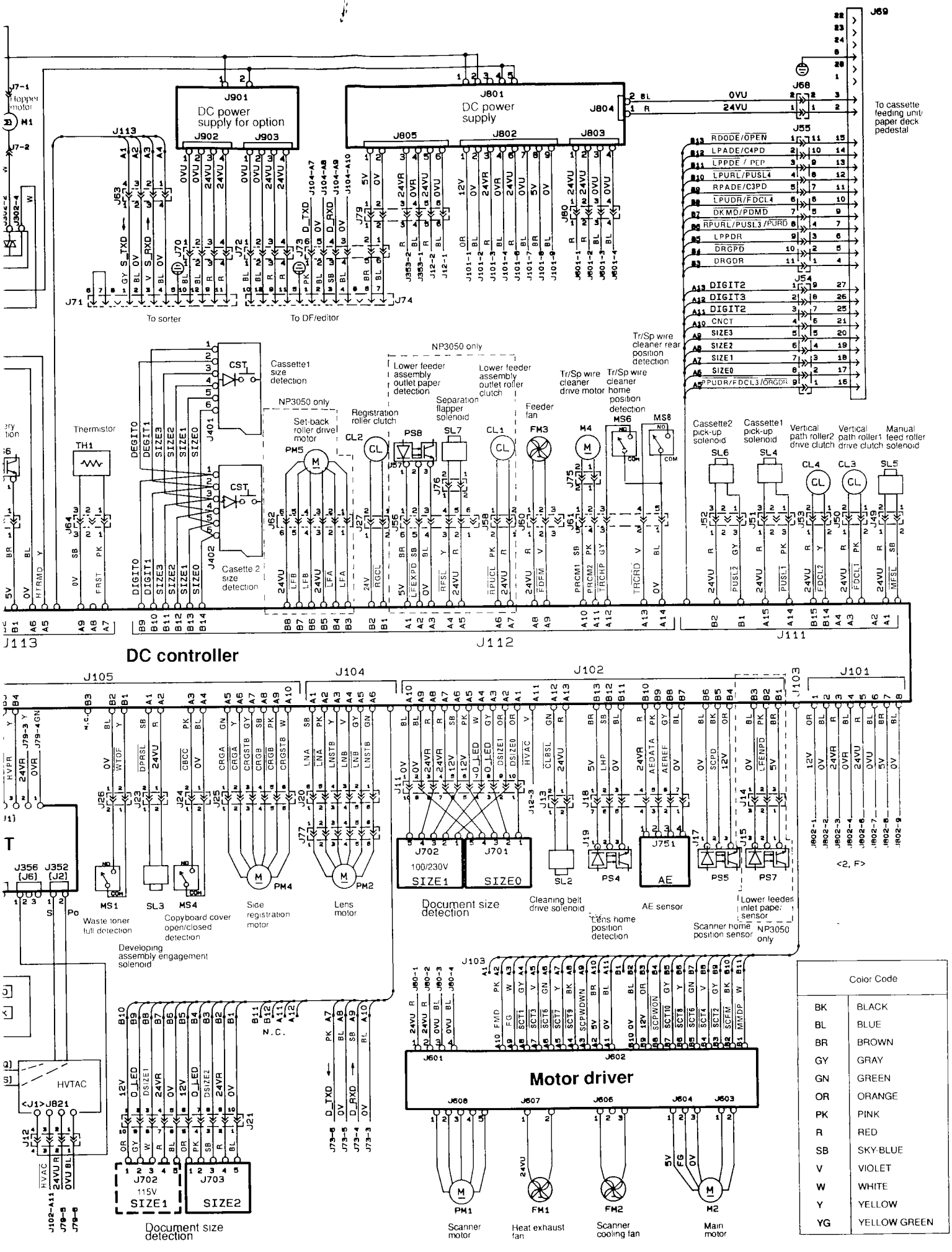
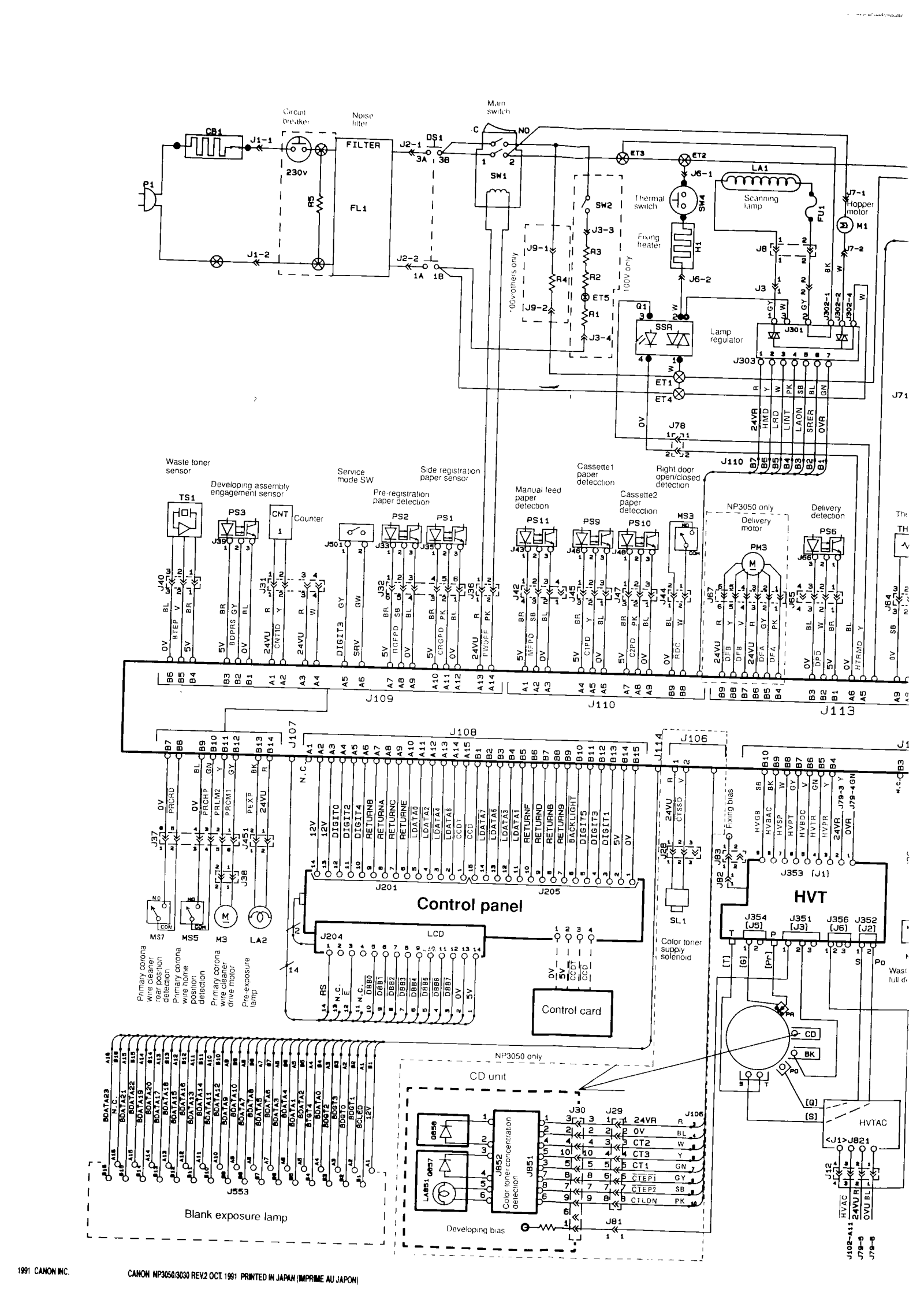
C. GENERAL CIRCUIT DIAGRAM





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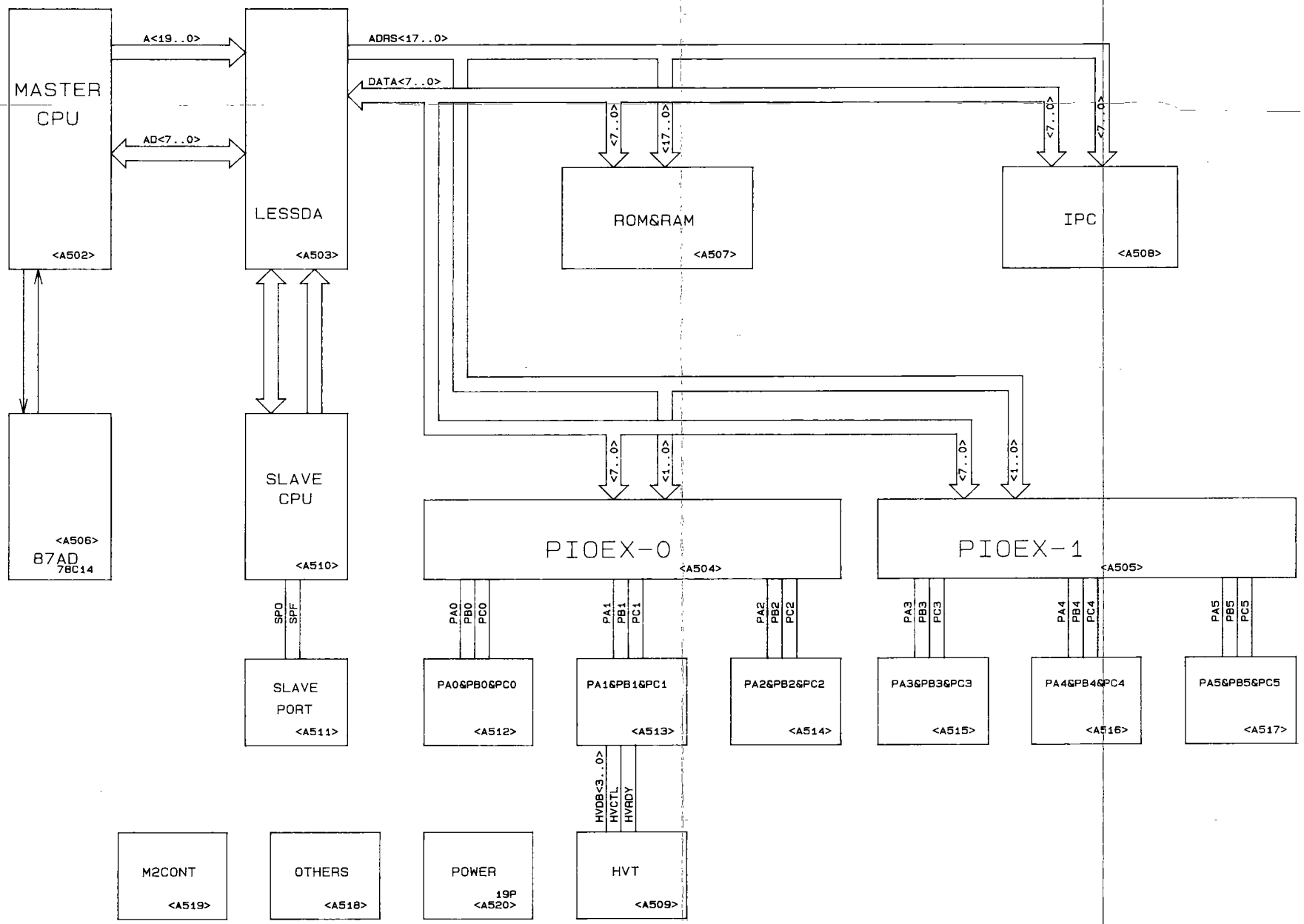
DC CONTROLLER (A501)



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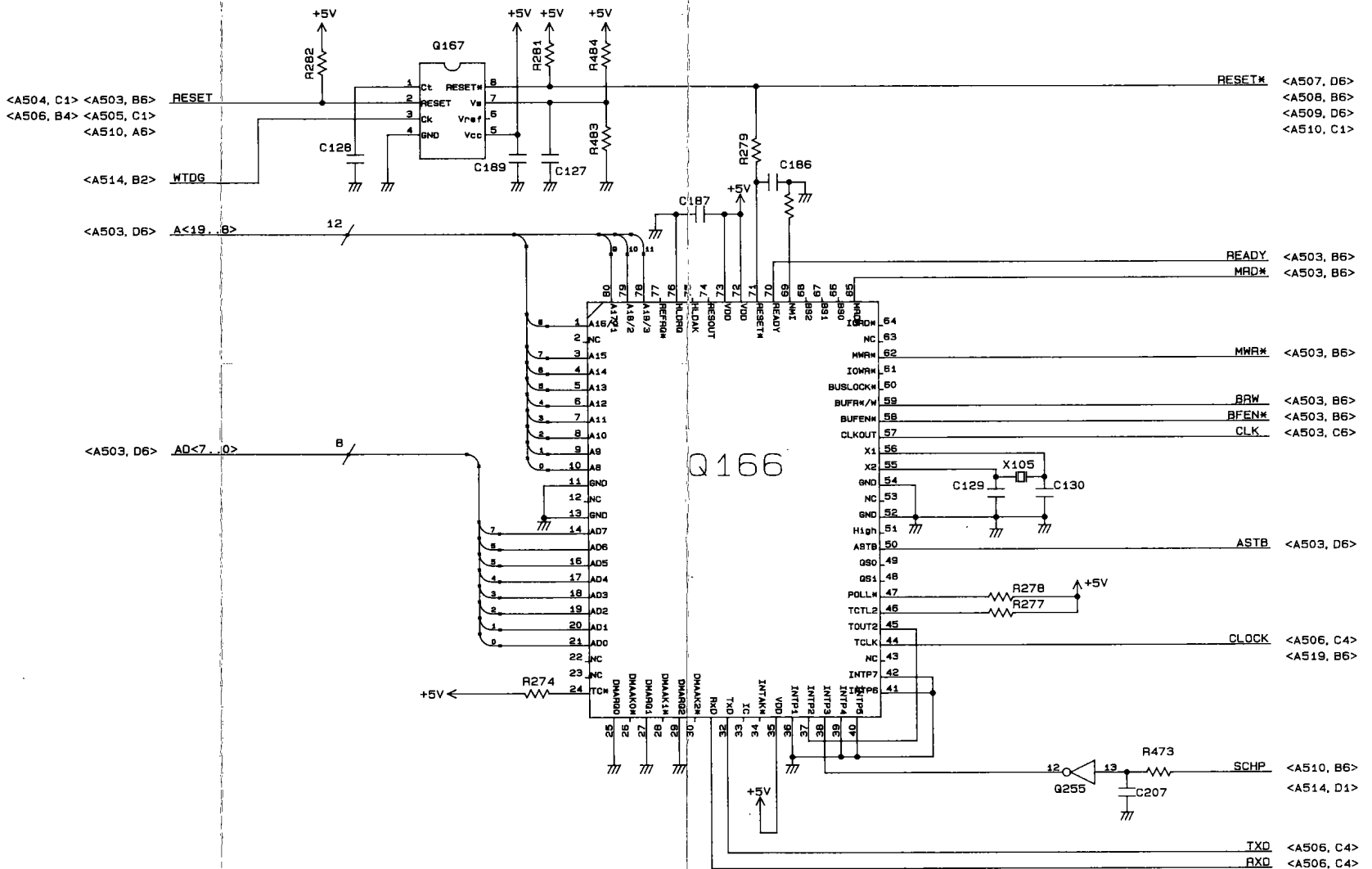

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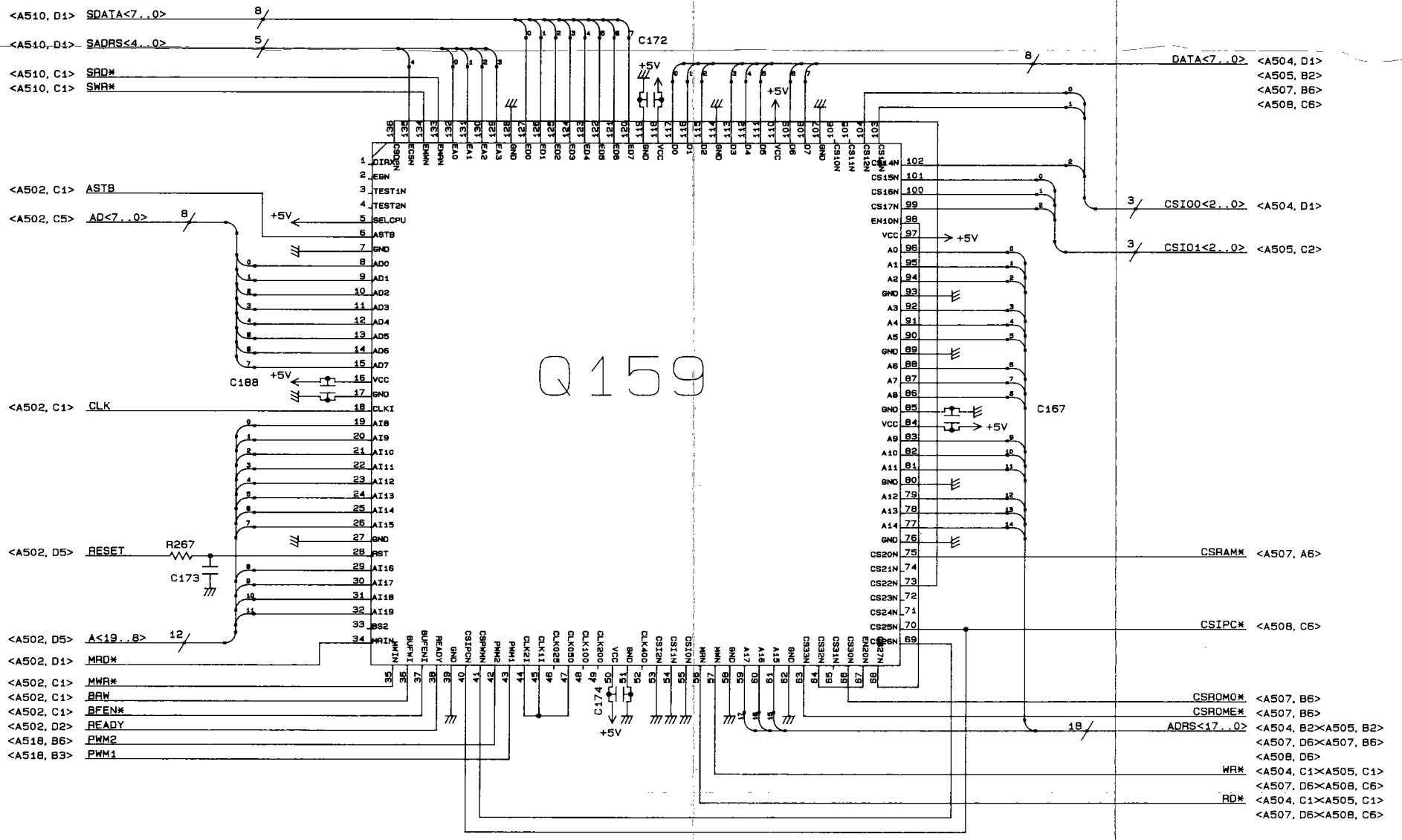

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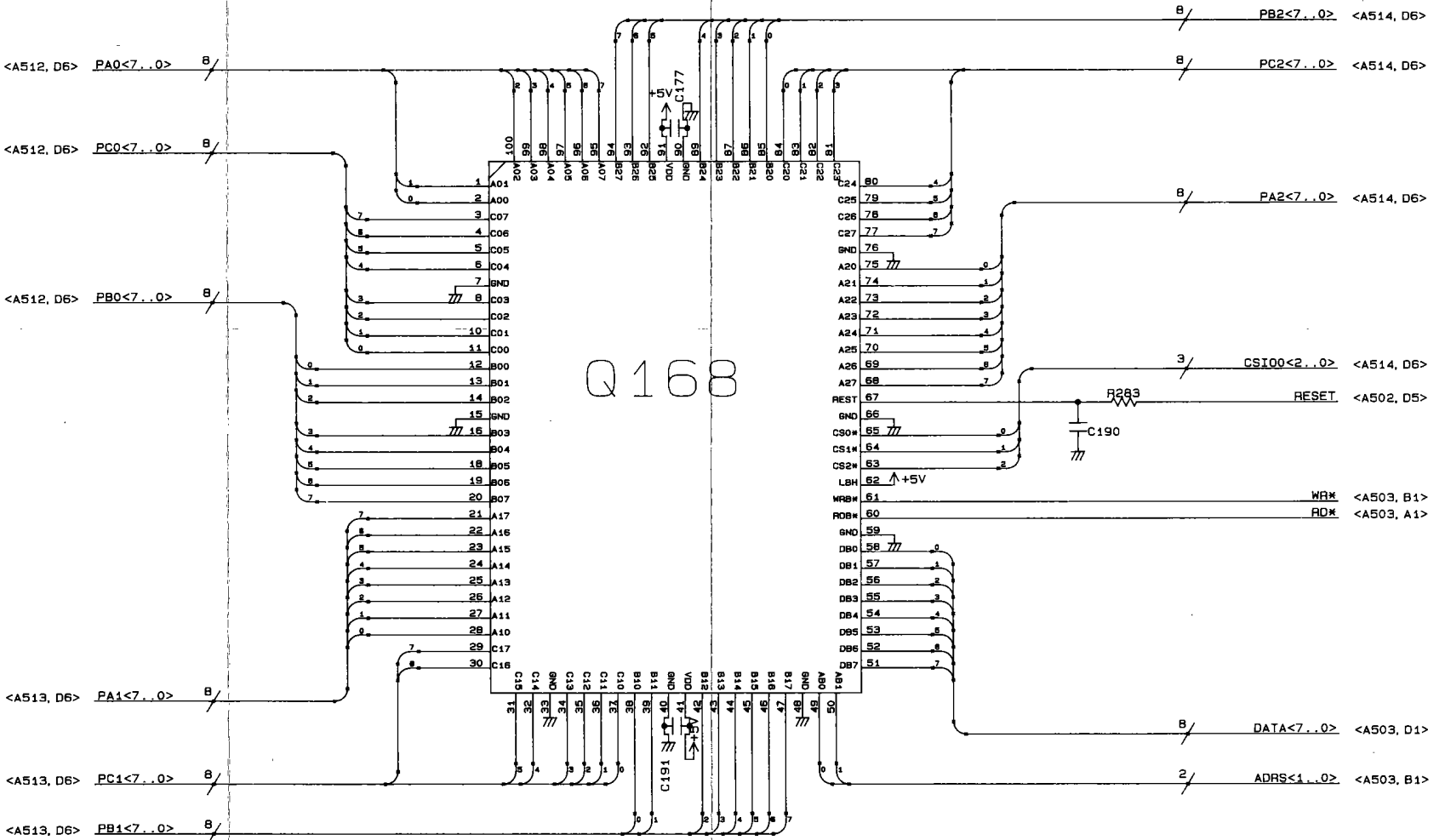

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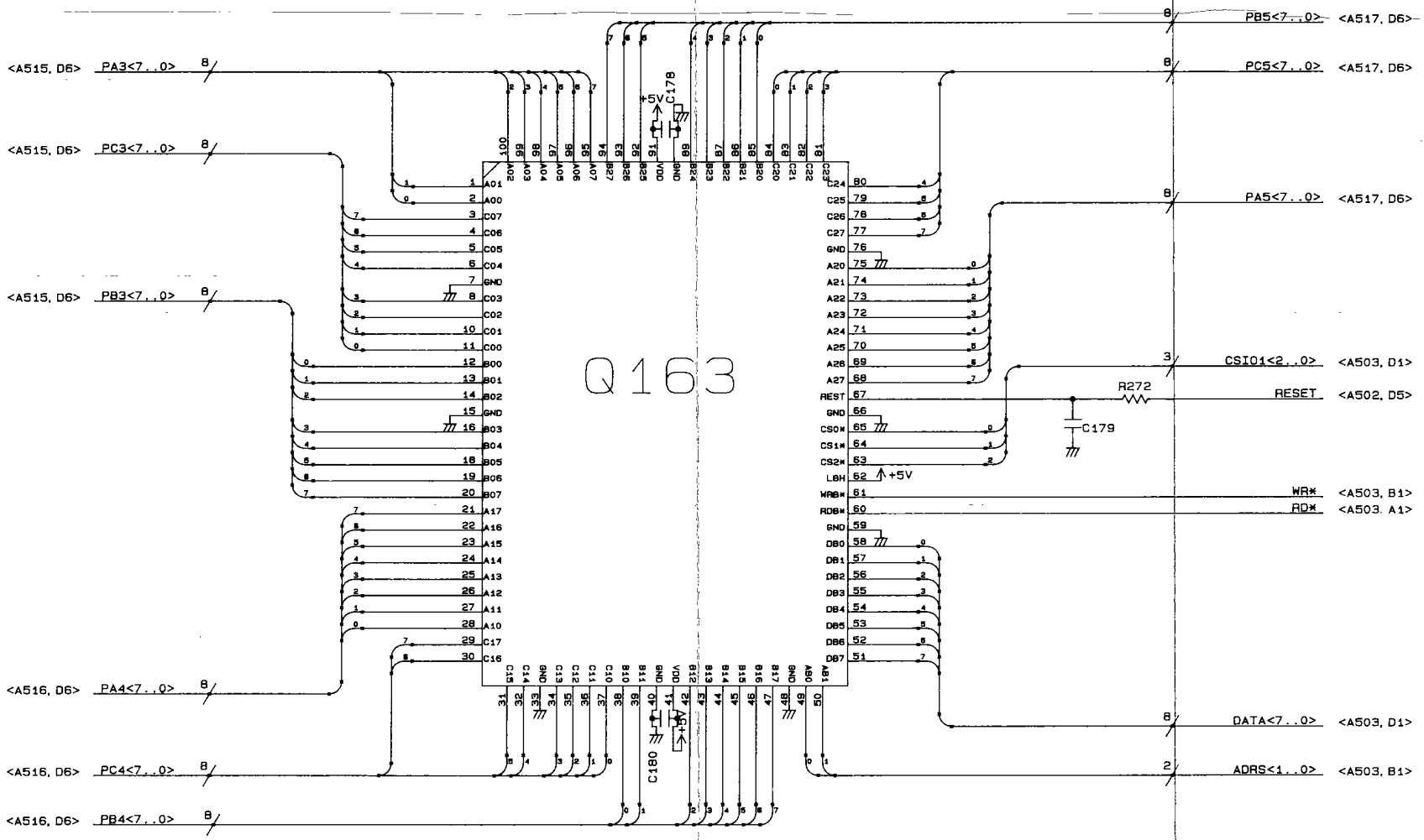

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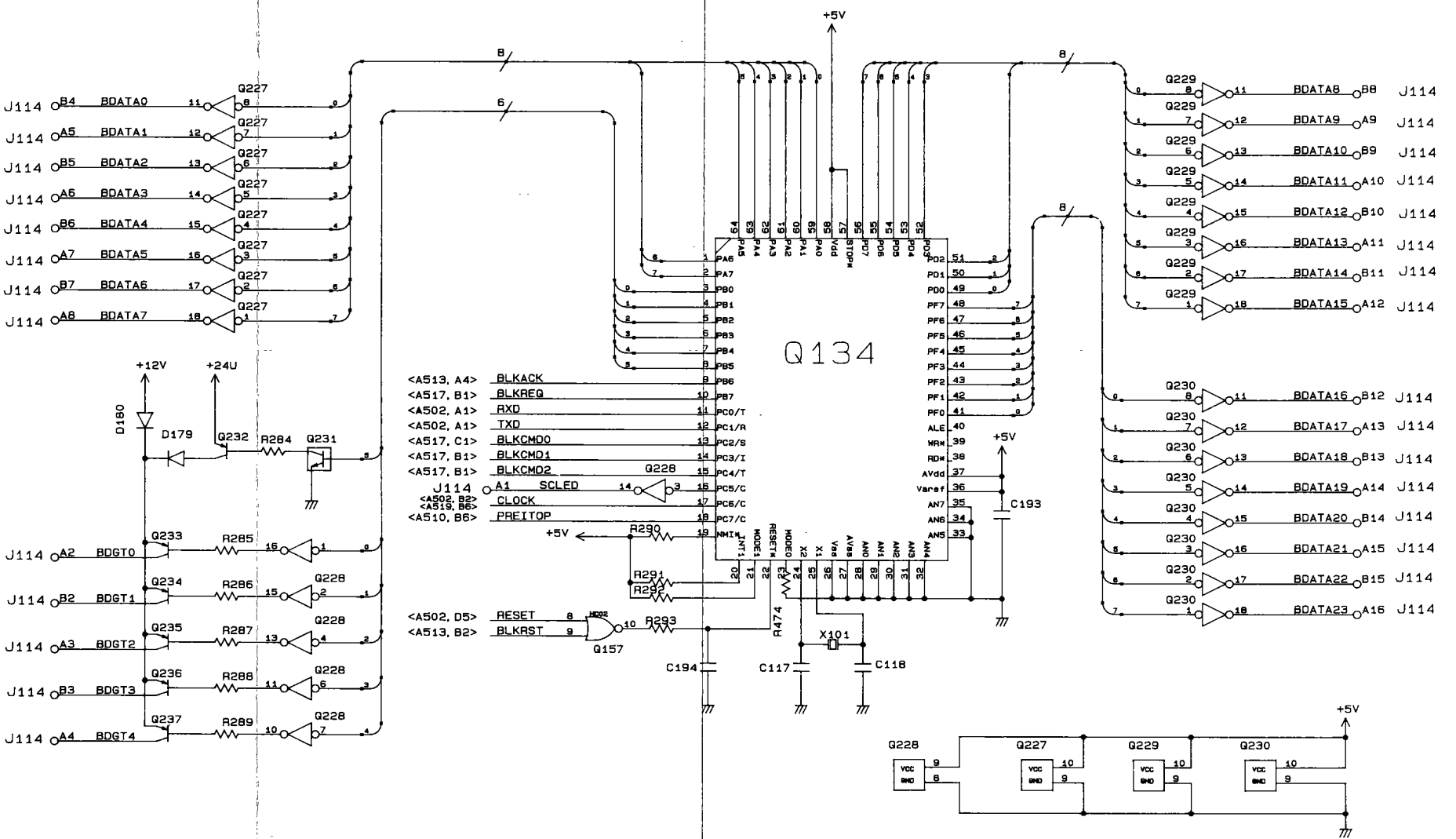

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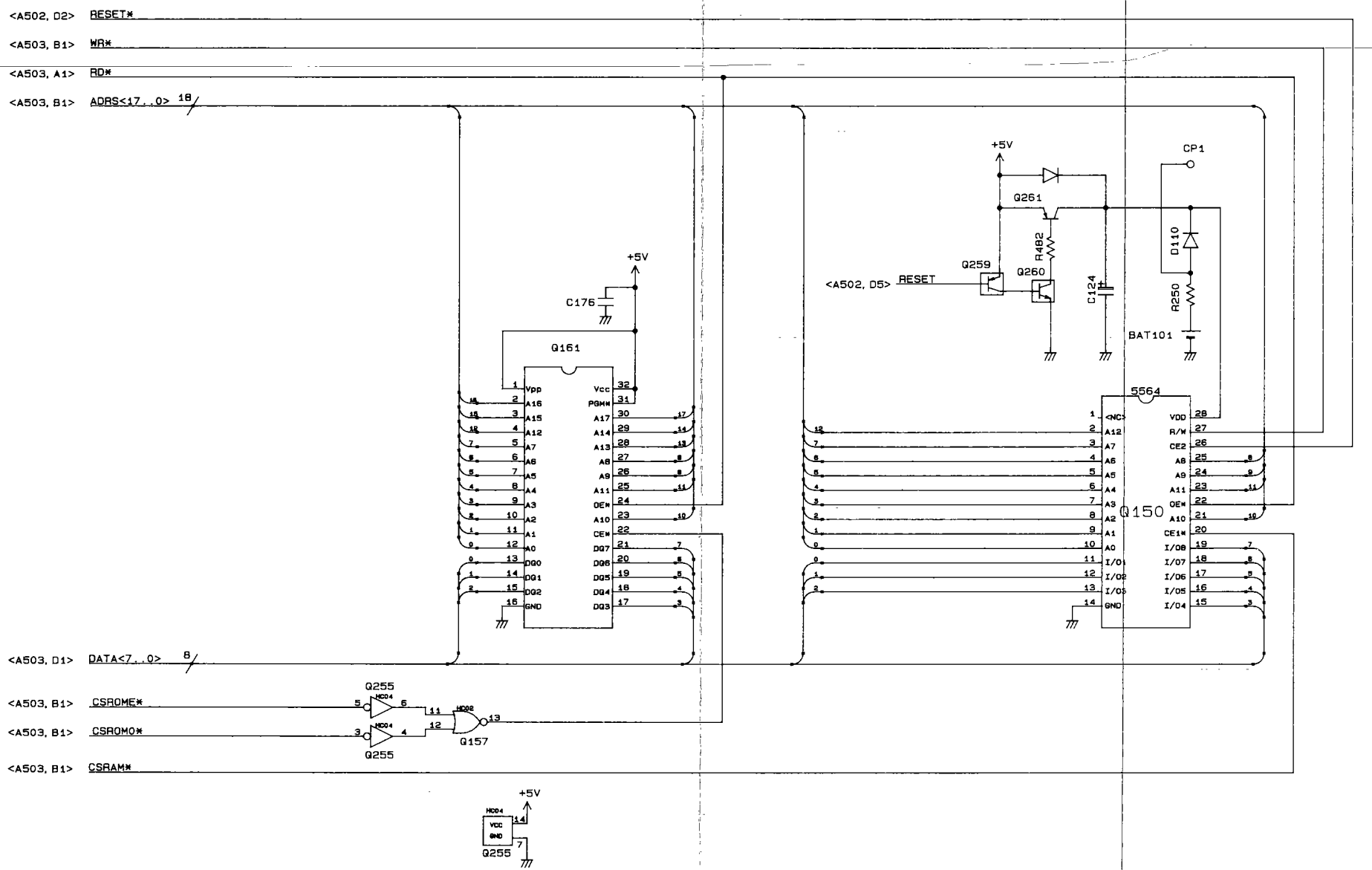

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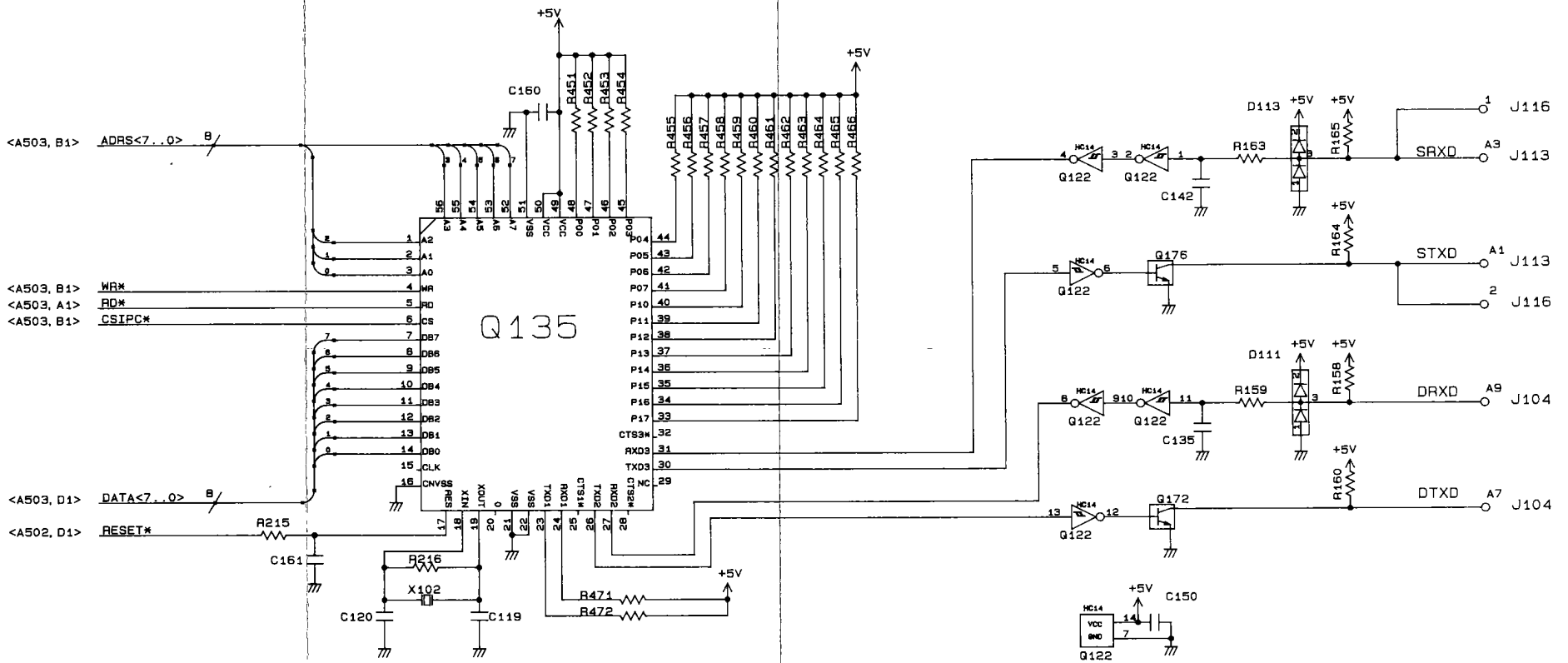
DC CONTROLLER (A508)



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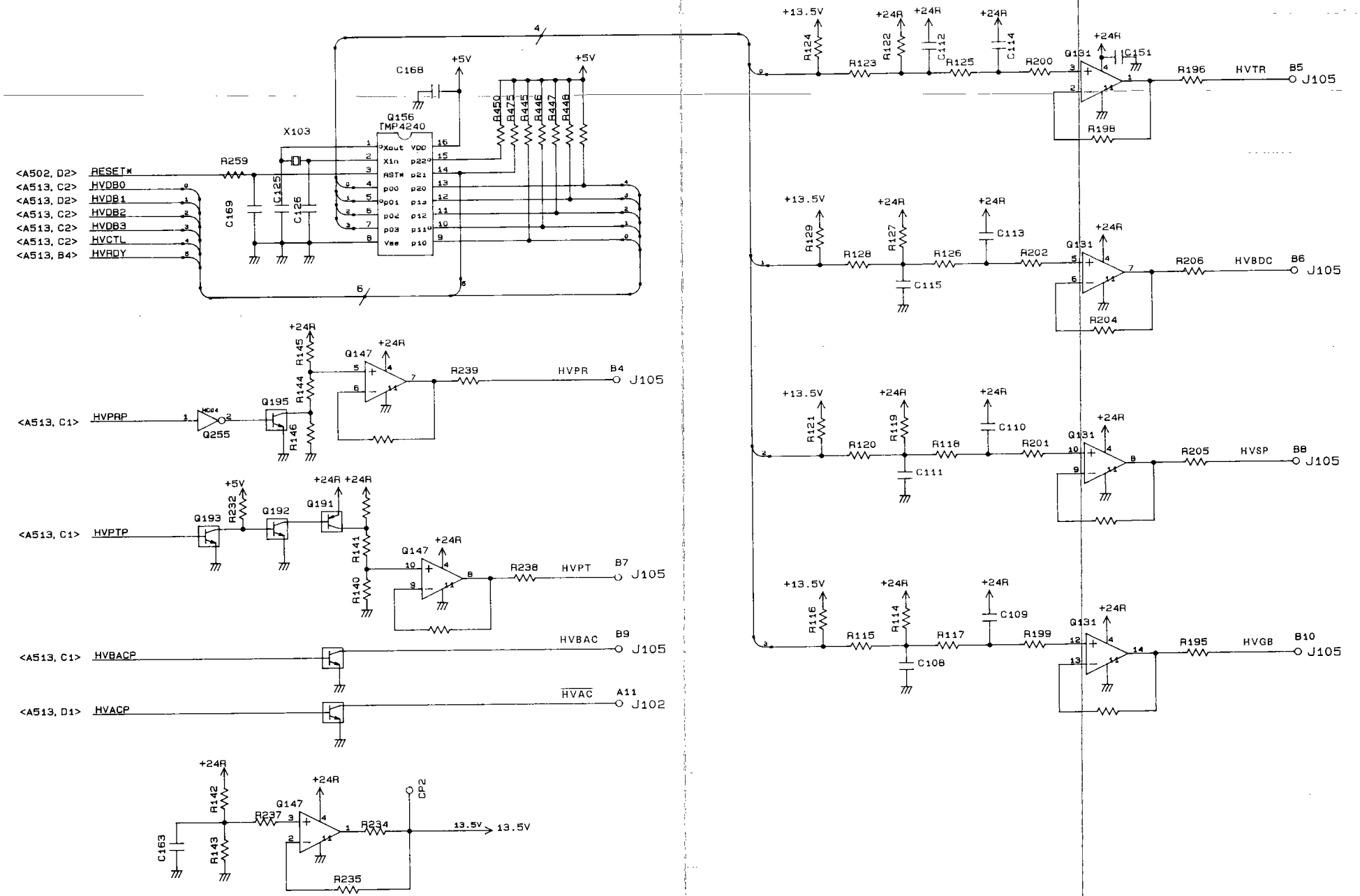

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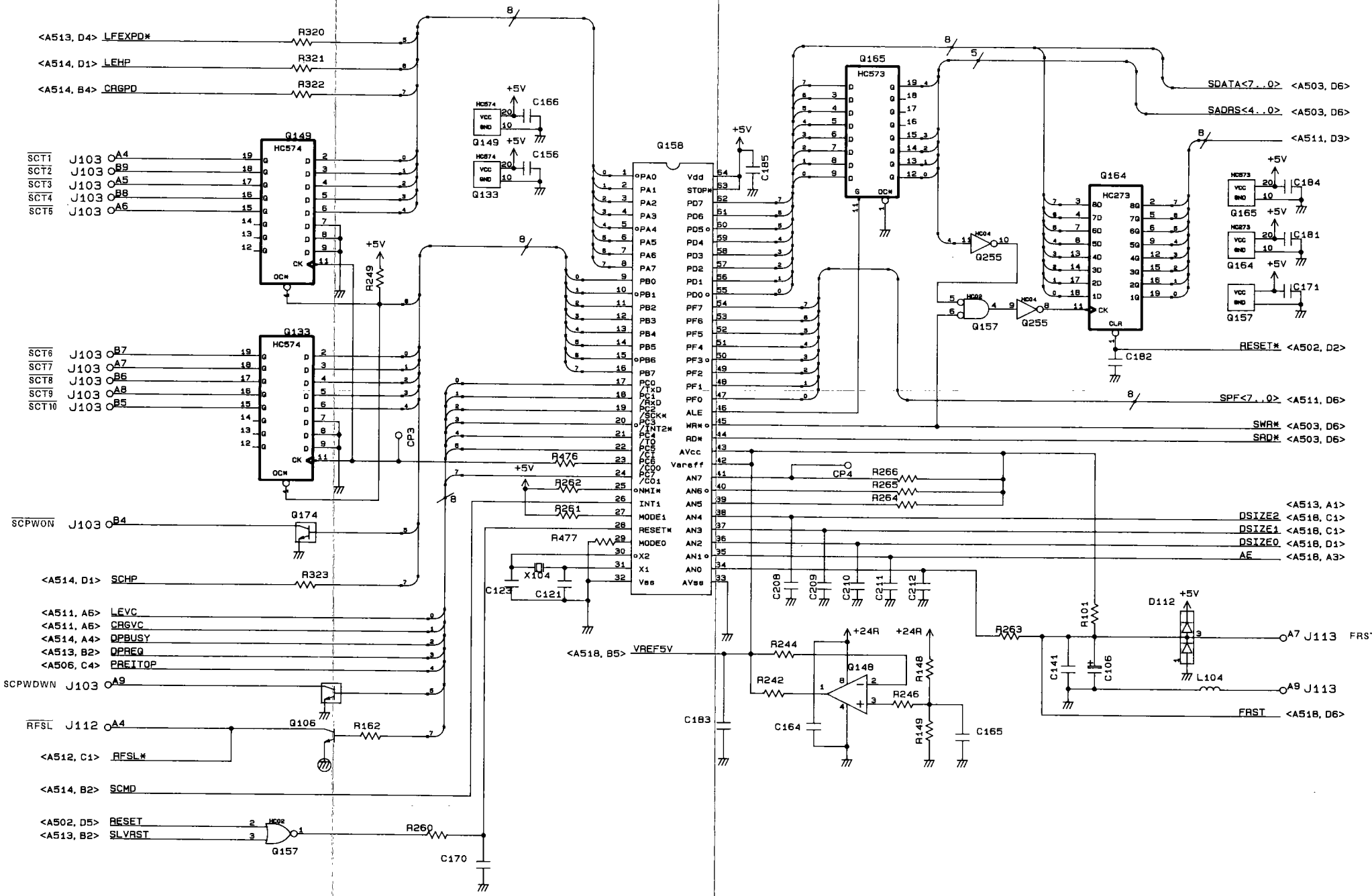
DC CONTROLLER (A510)



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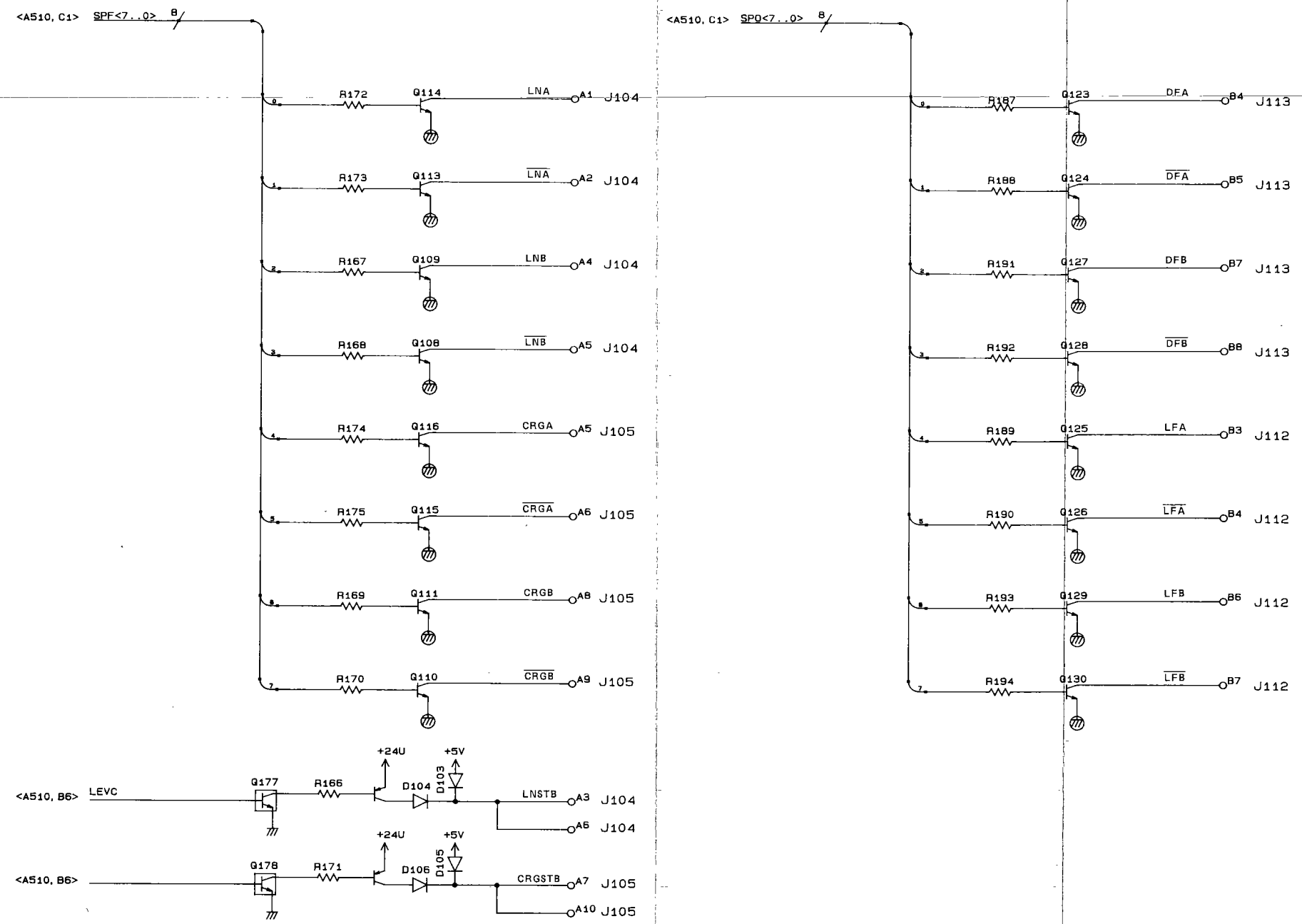

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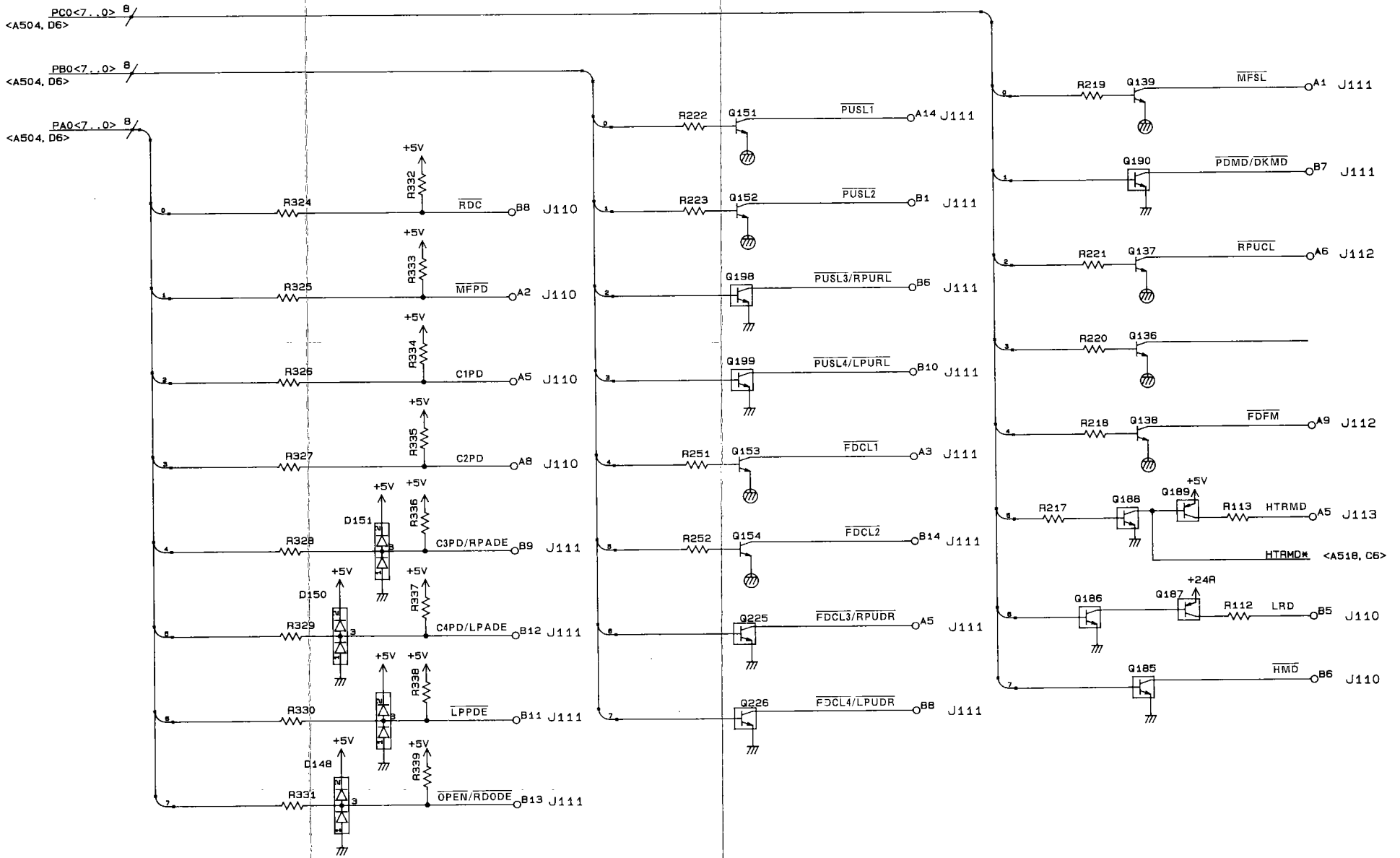

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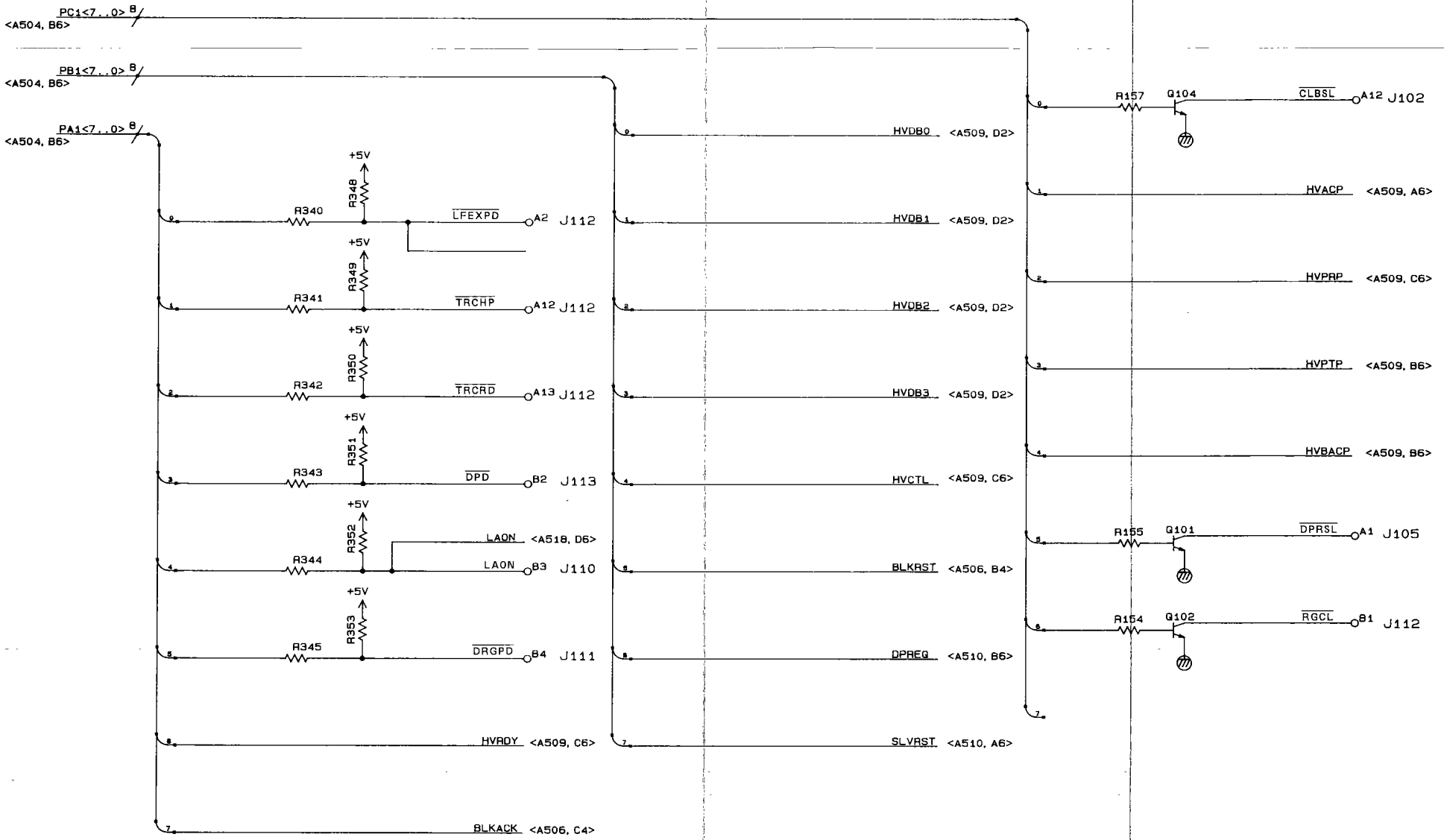

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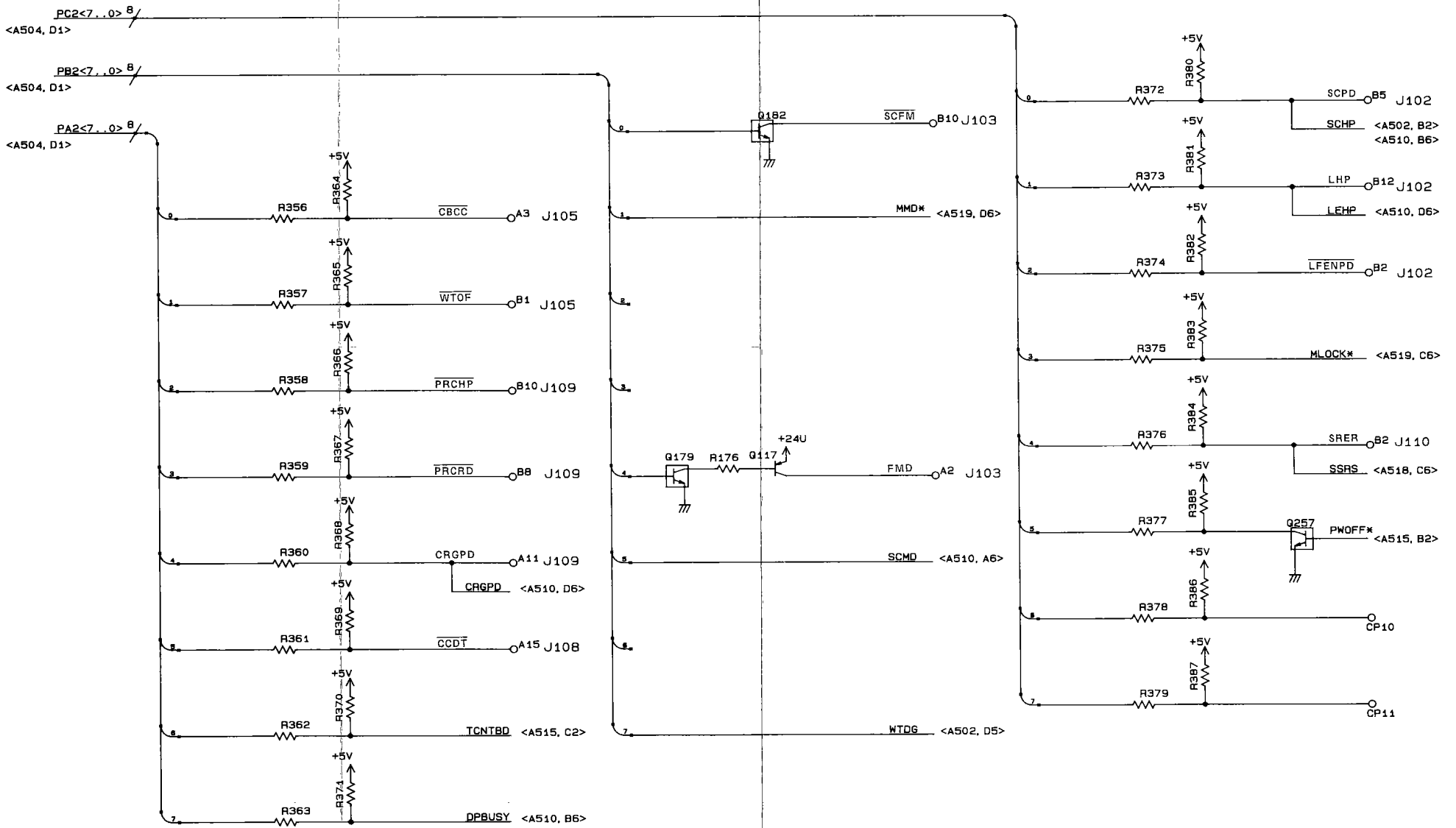
DC CONTROLLER (A514)



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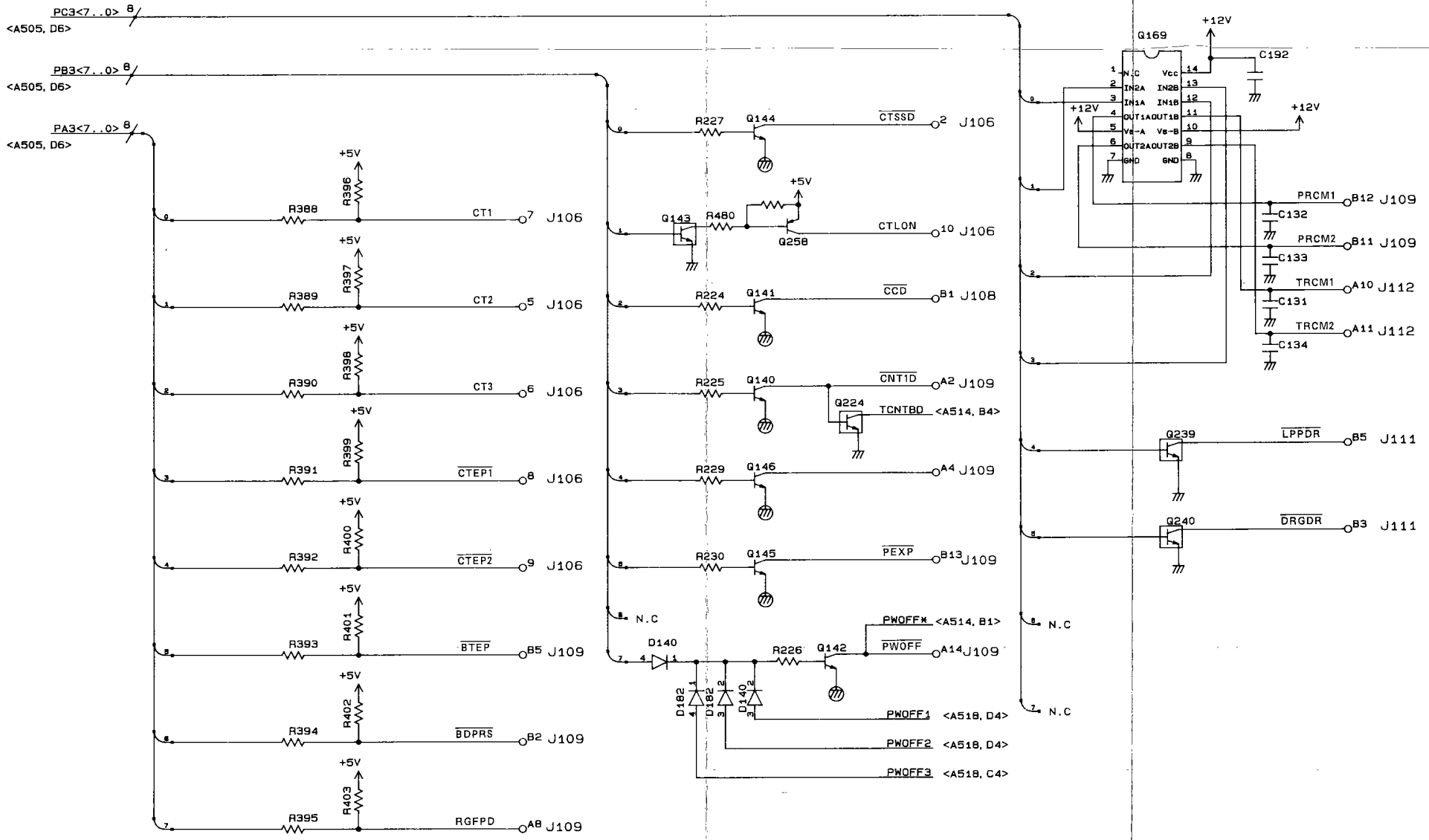

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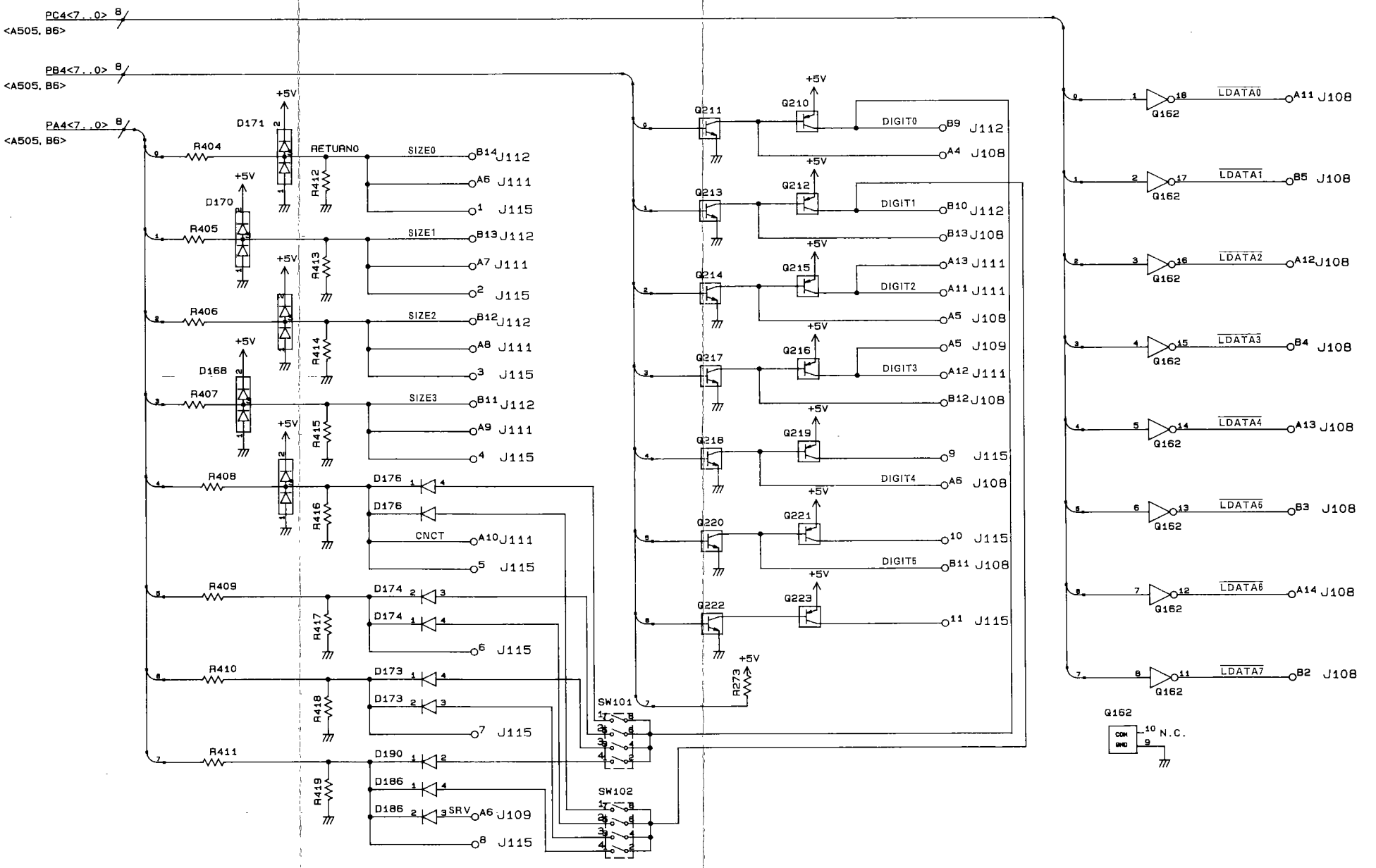

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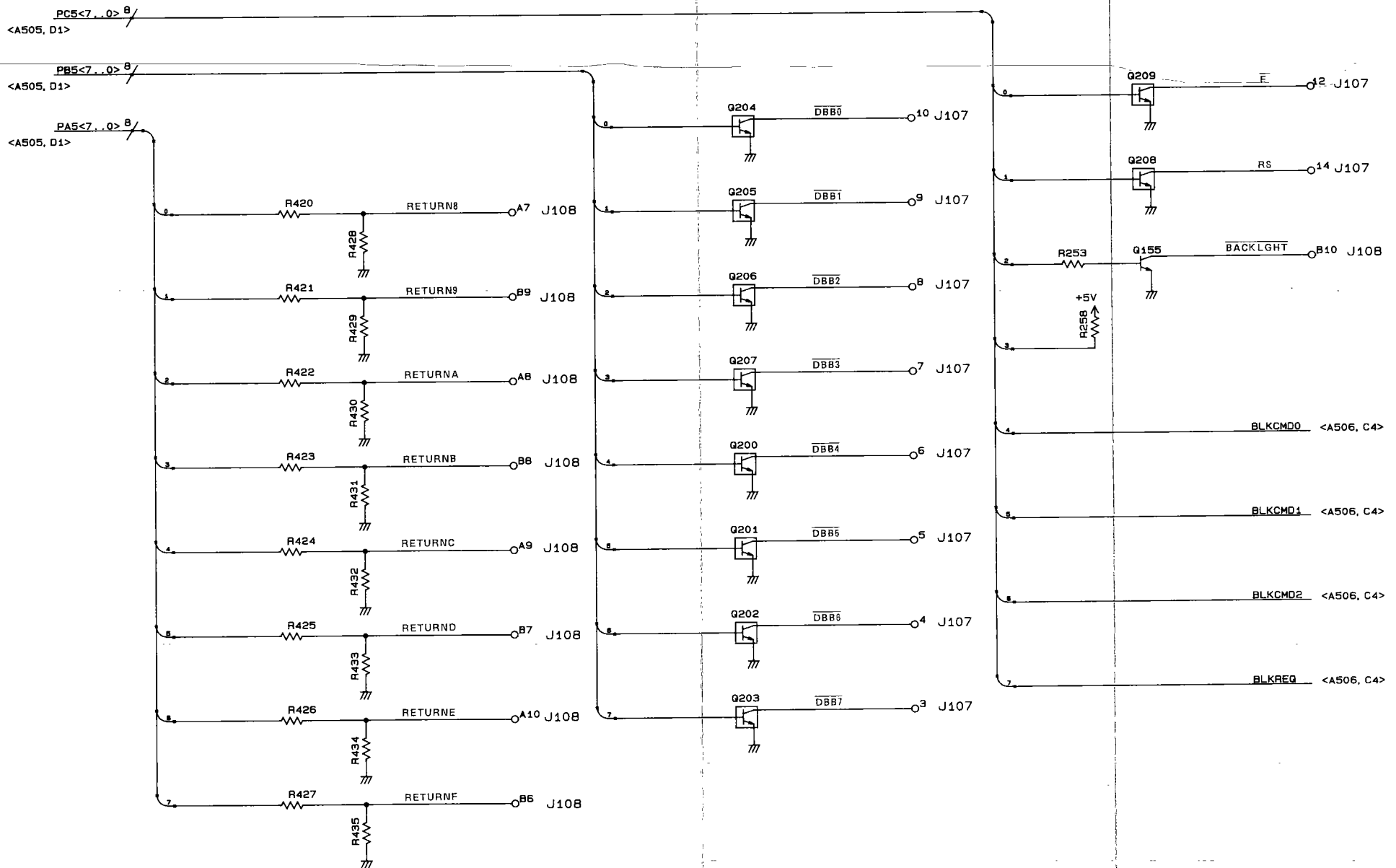

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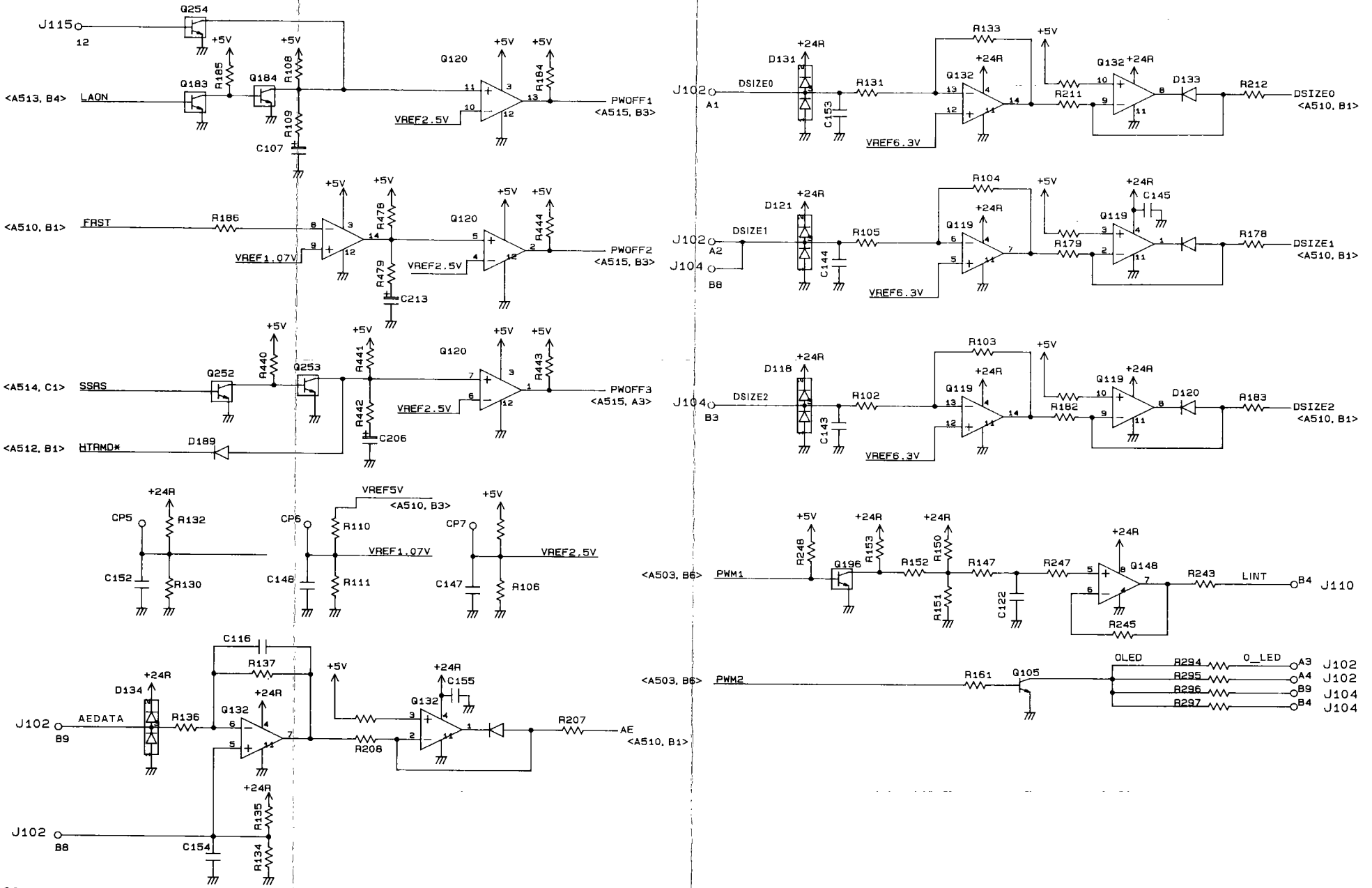

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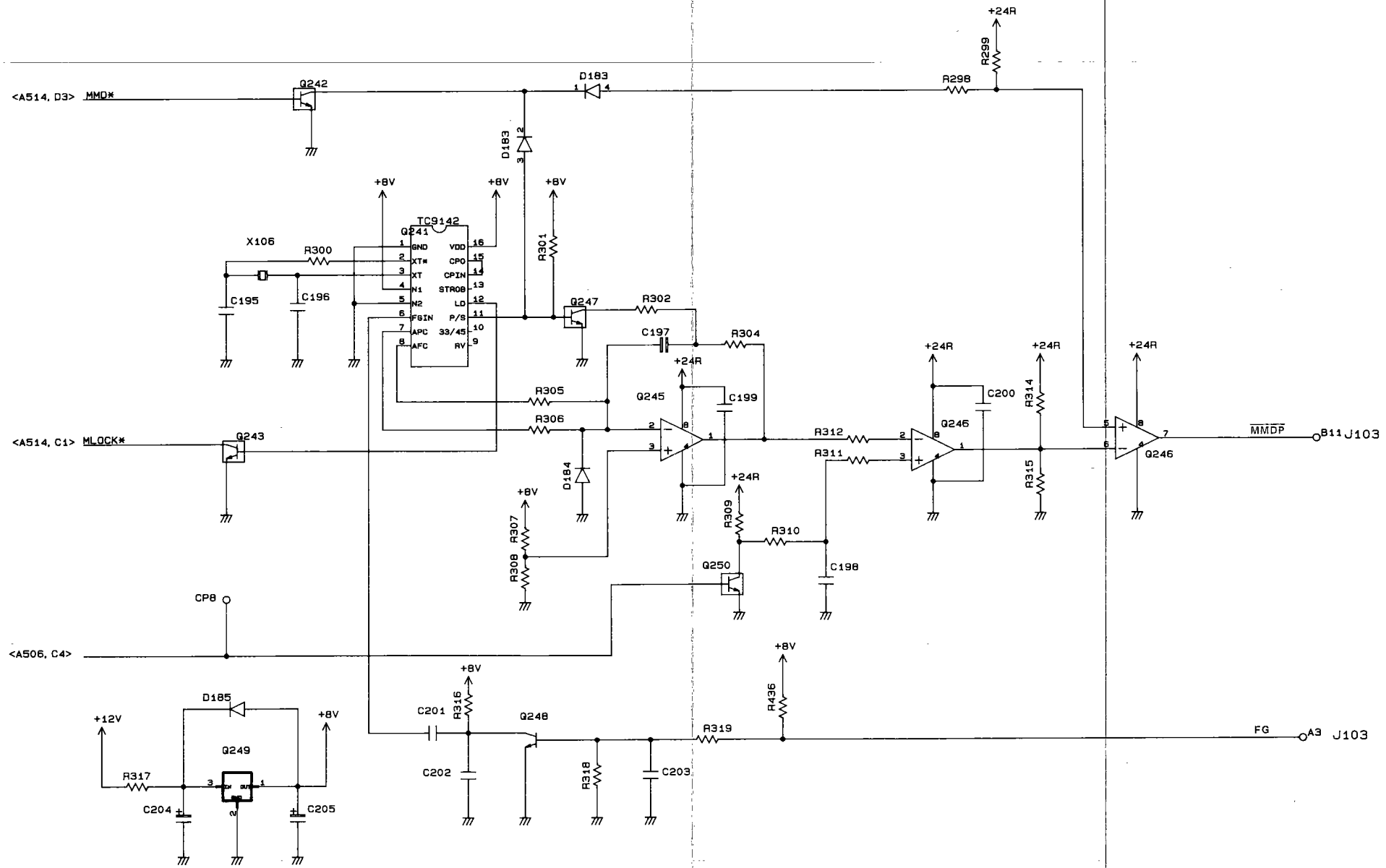

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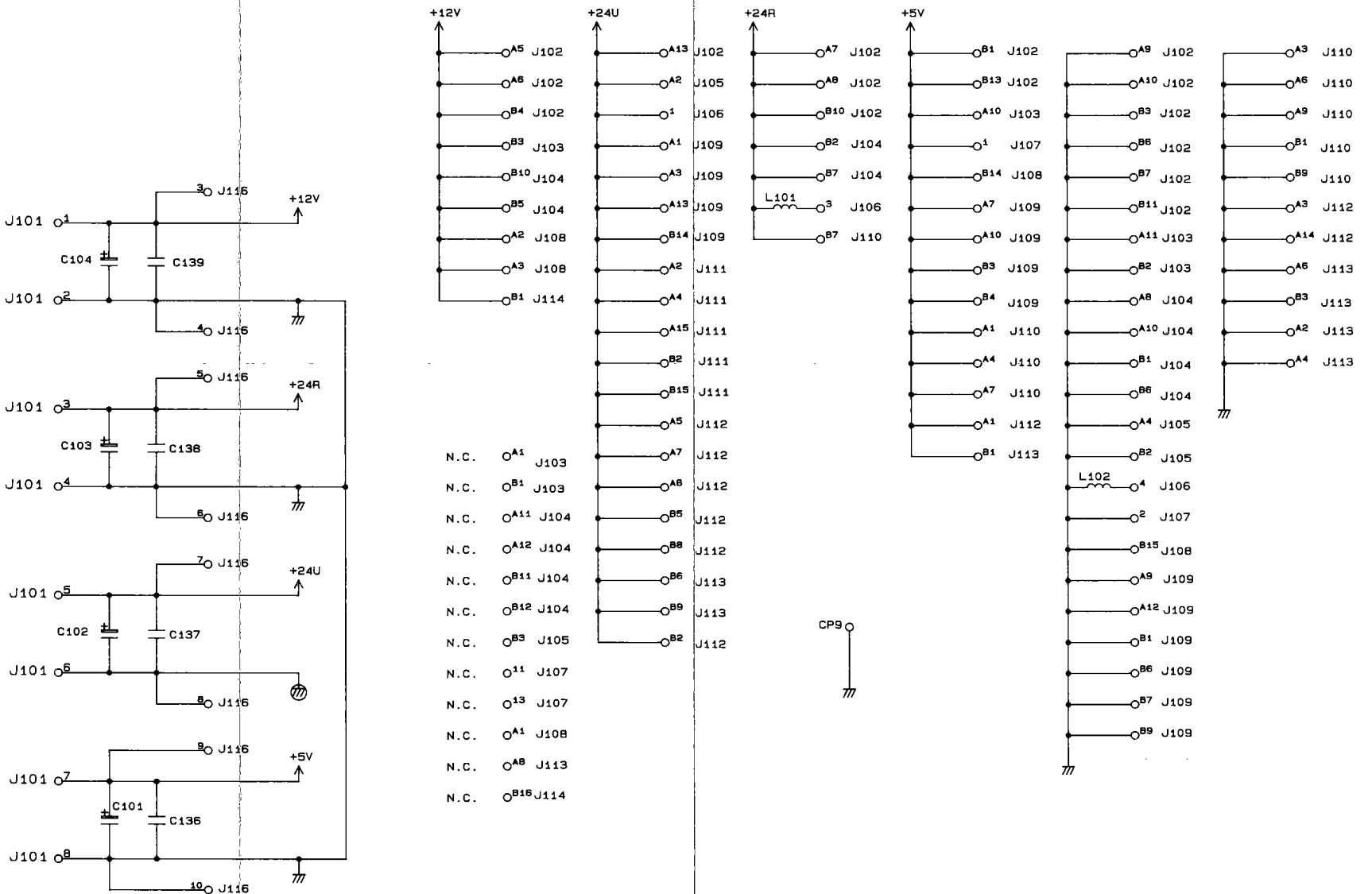

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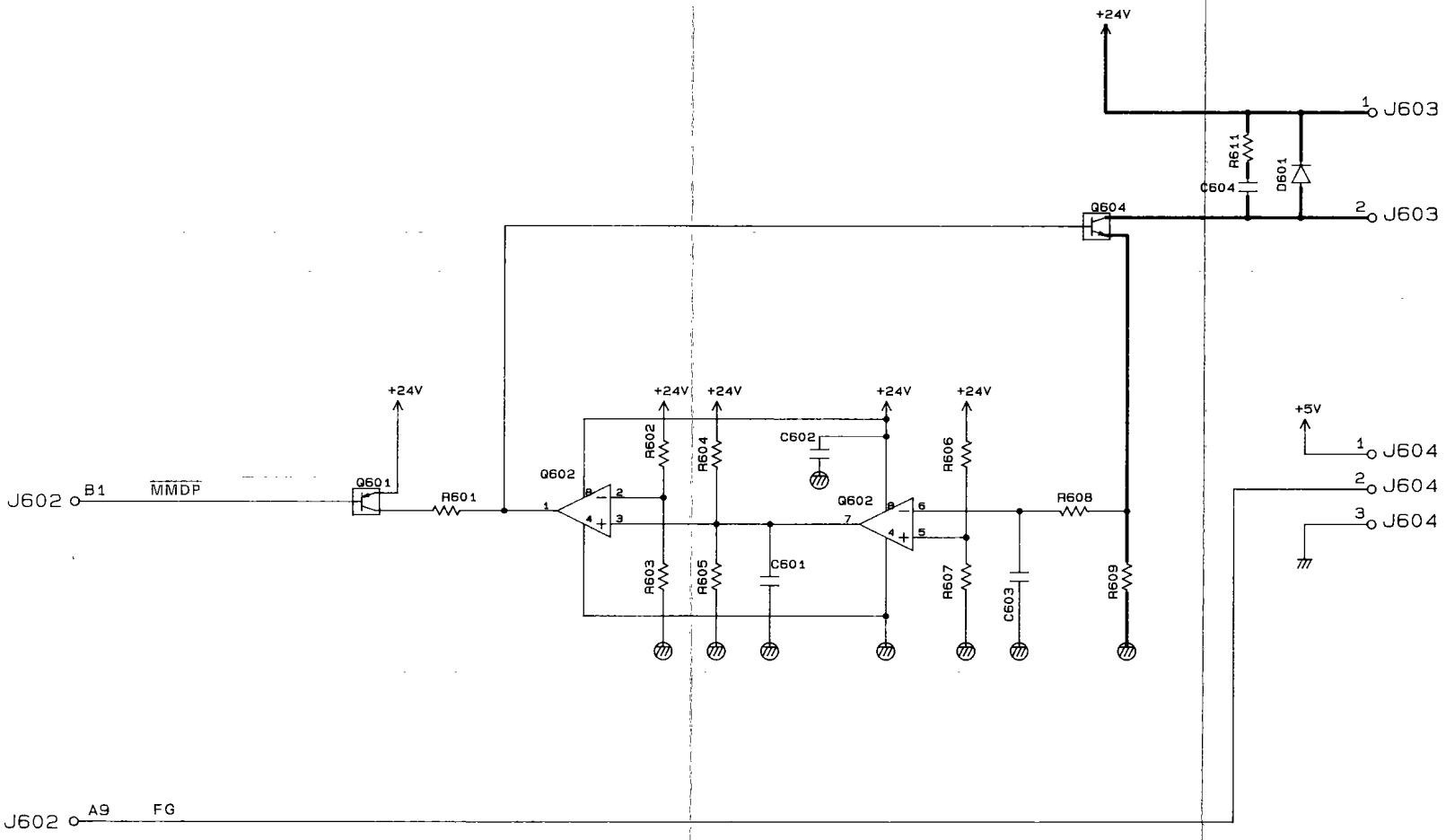
MOTOR DRIVER (1 / 3)



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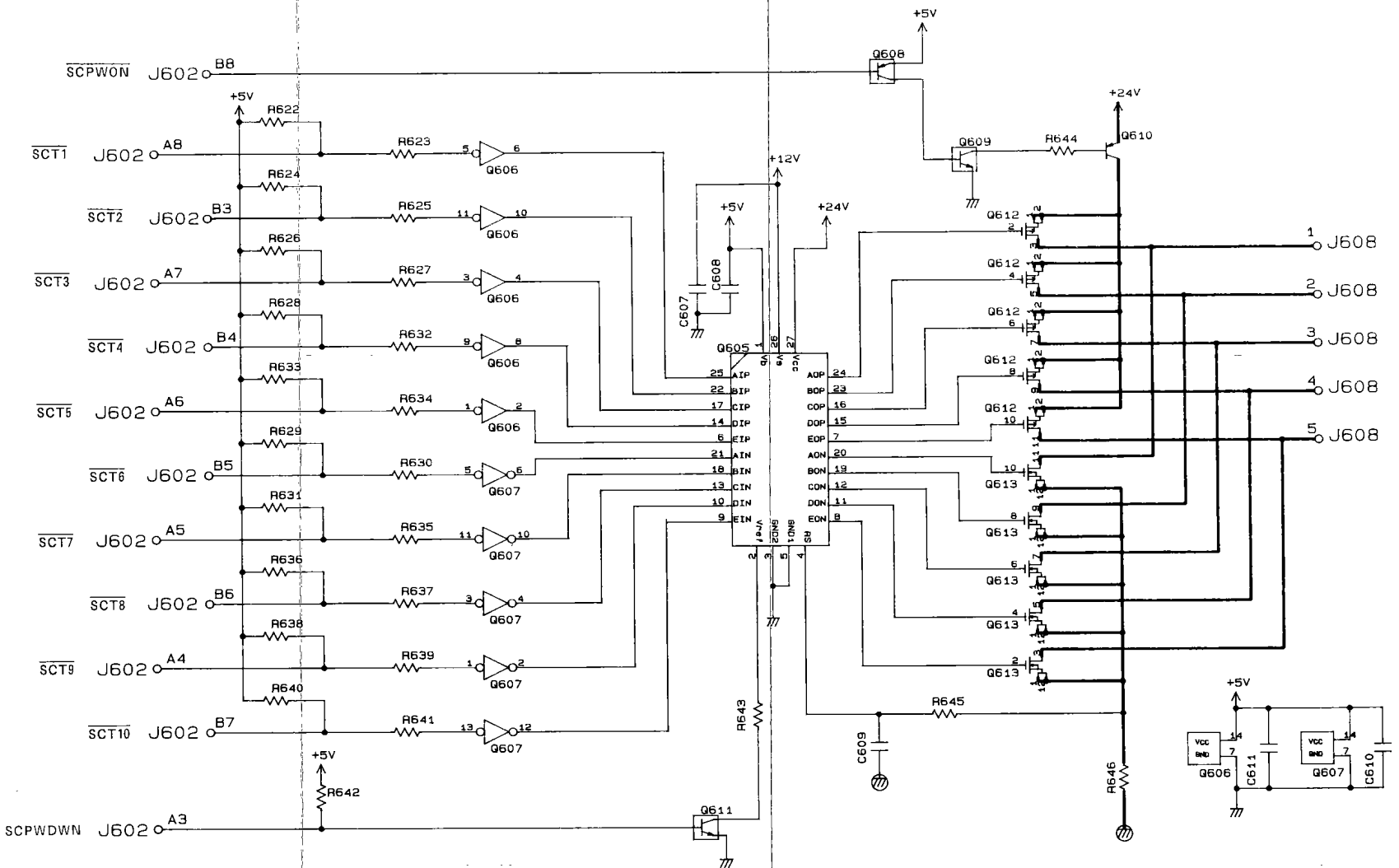
MOTOR DRIVER (2 / 3)



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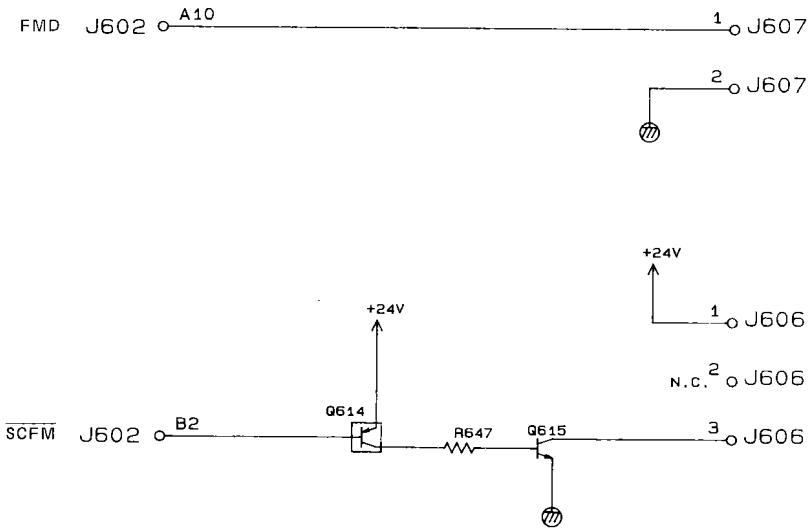

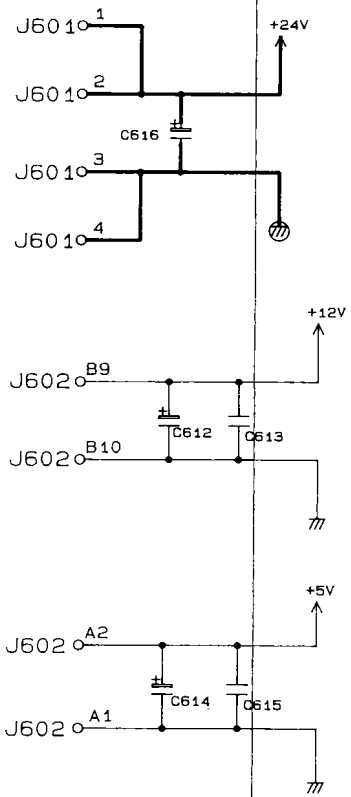

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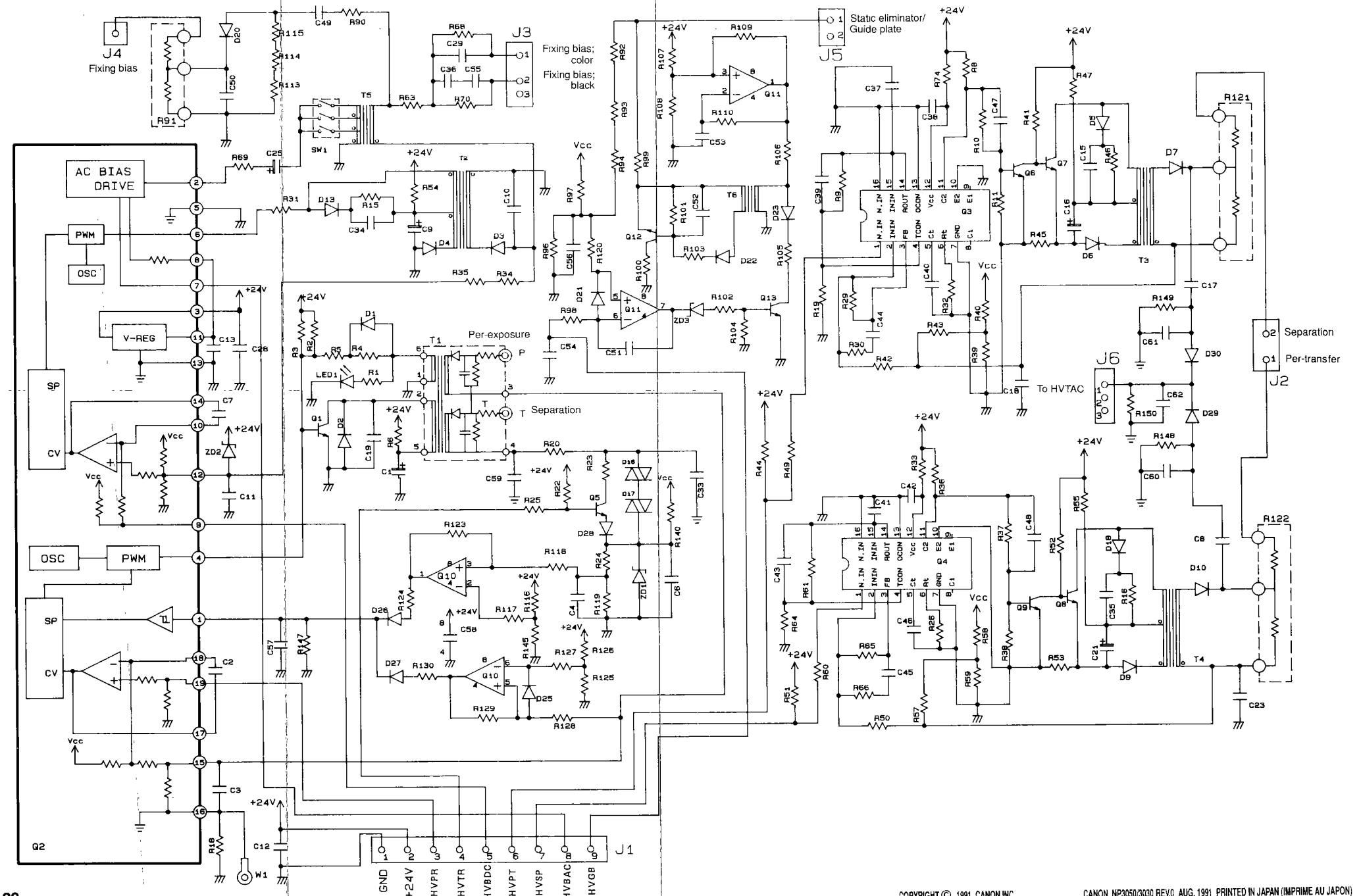
F. HVT



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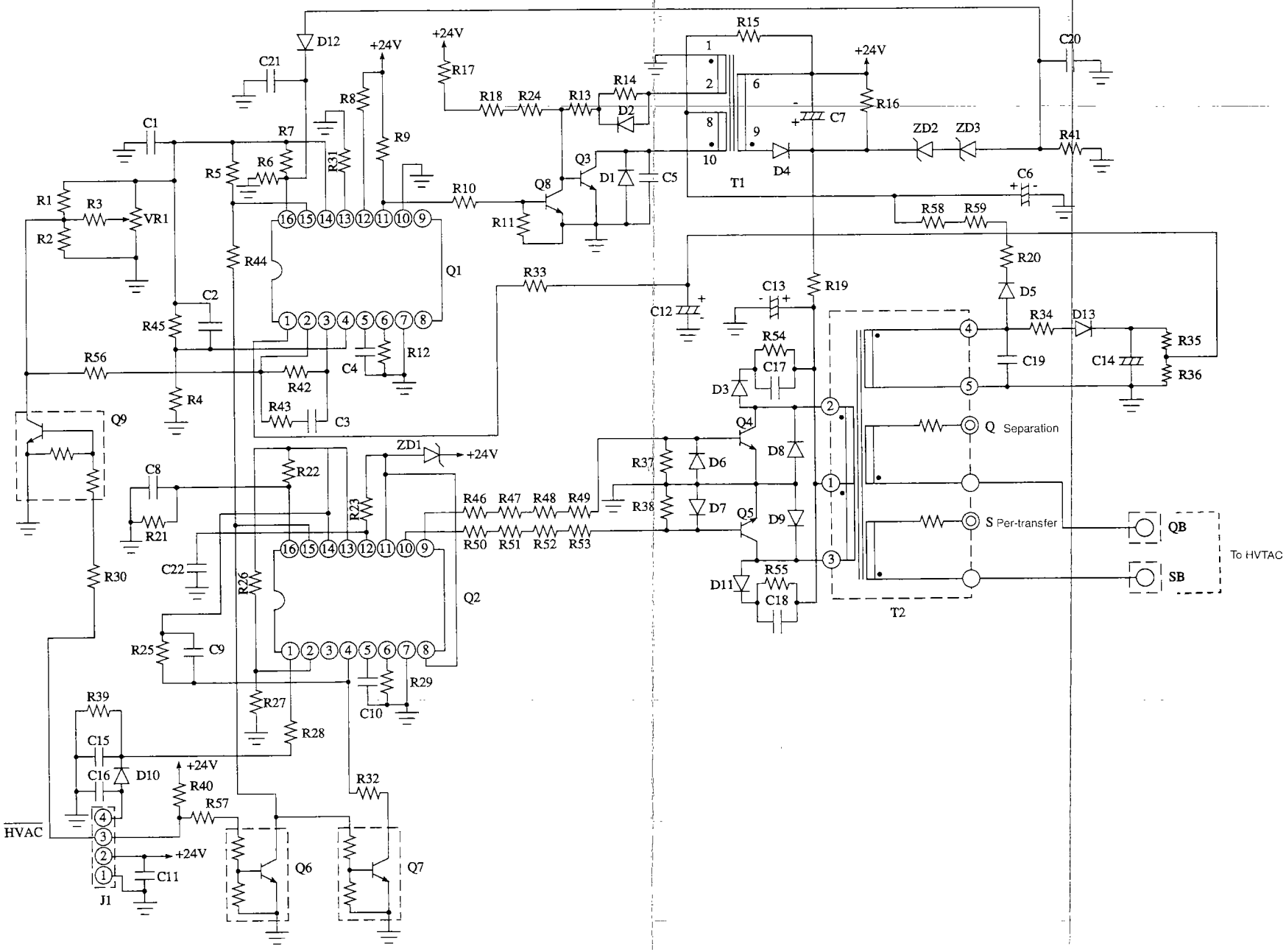

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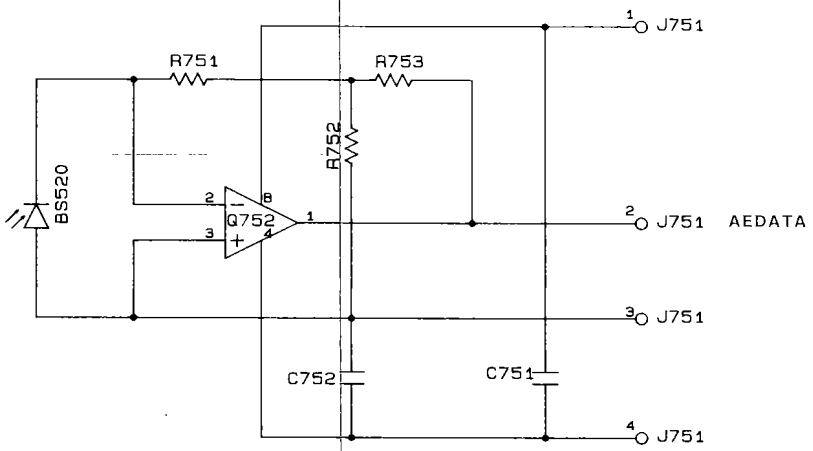
H. AE SENSOR



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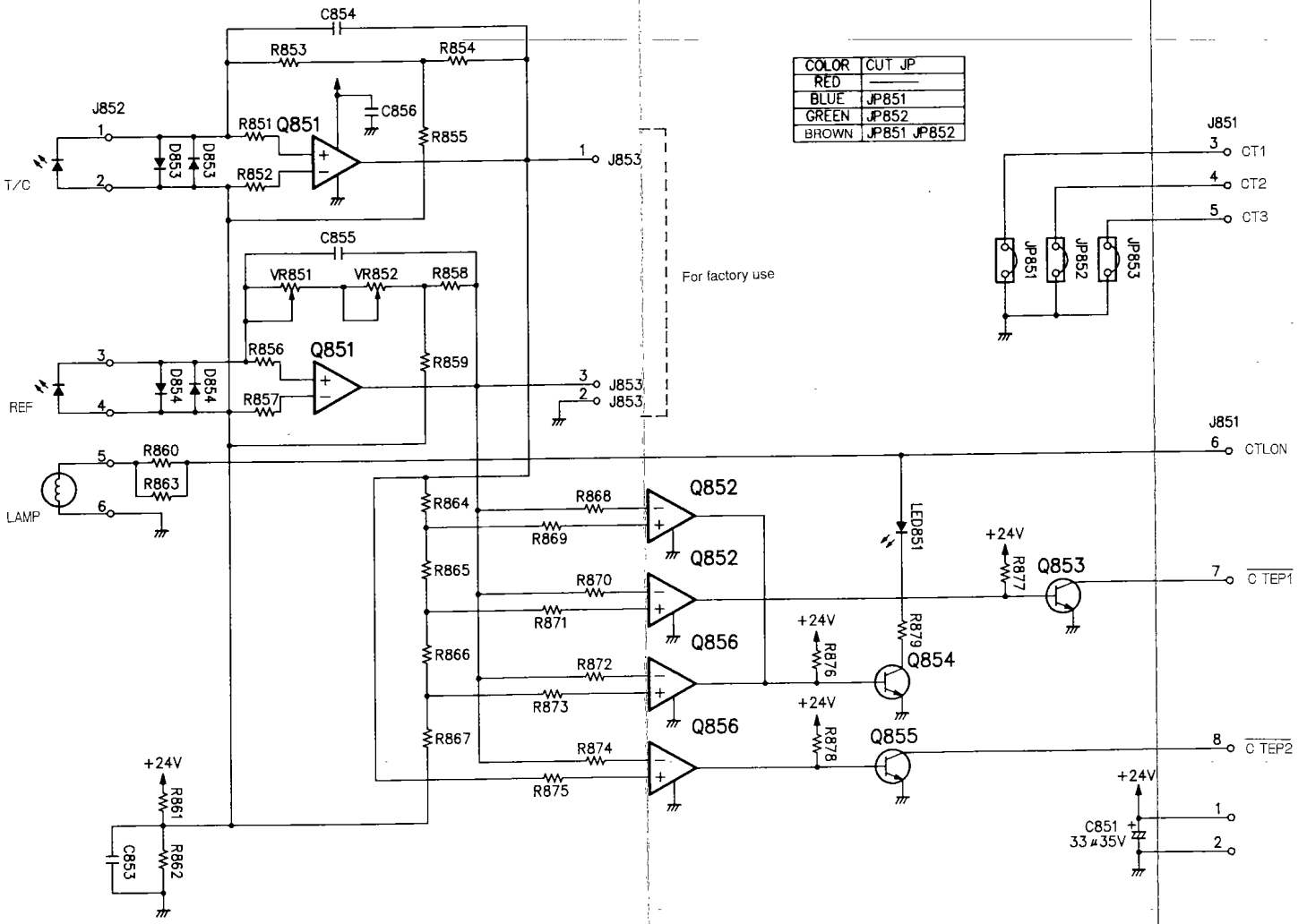
I. COLOR TONER CONCENTRATION DETECTION (NP3050 ONLY)



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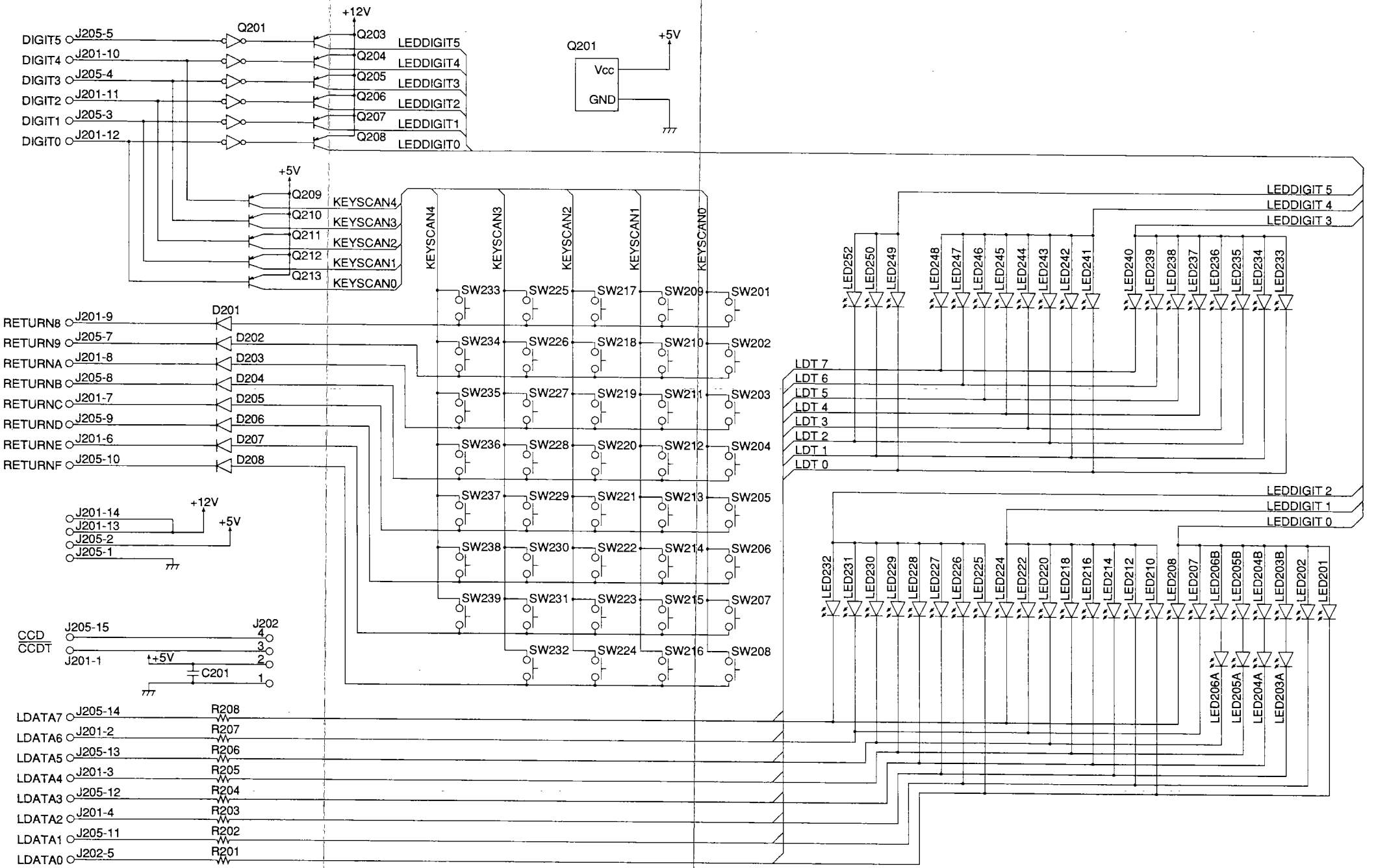
J. CONTROL PANEL



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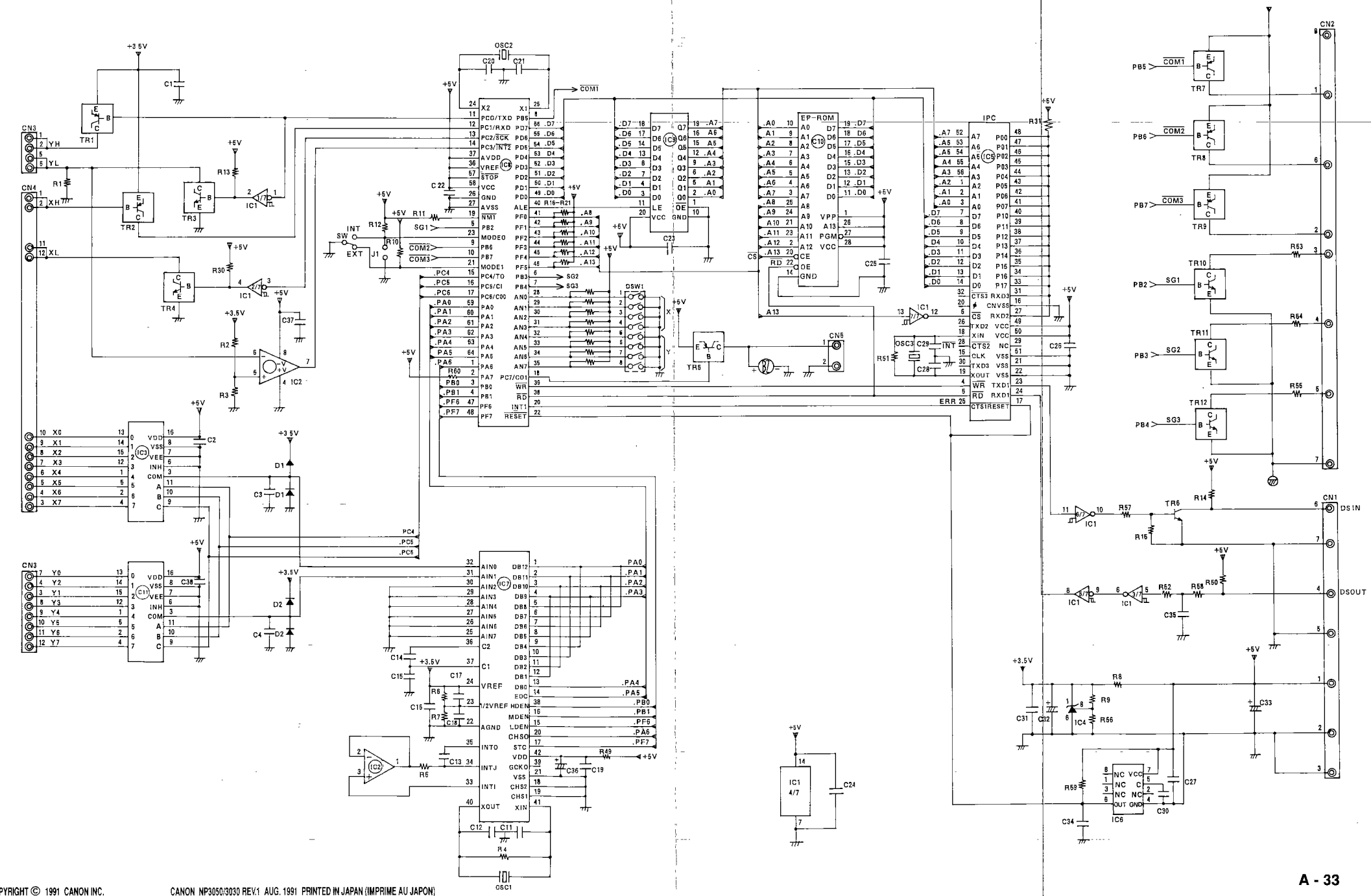

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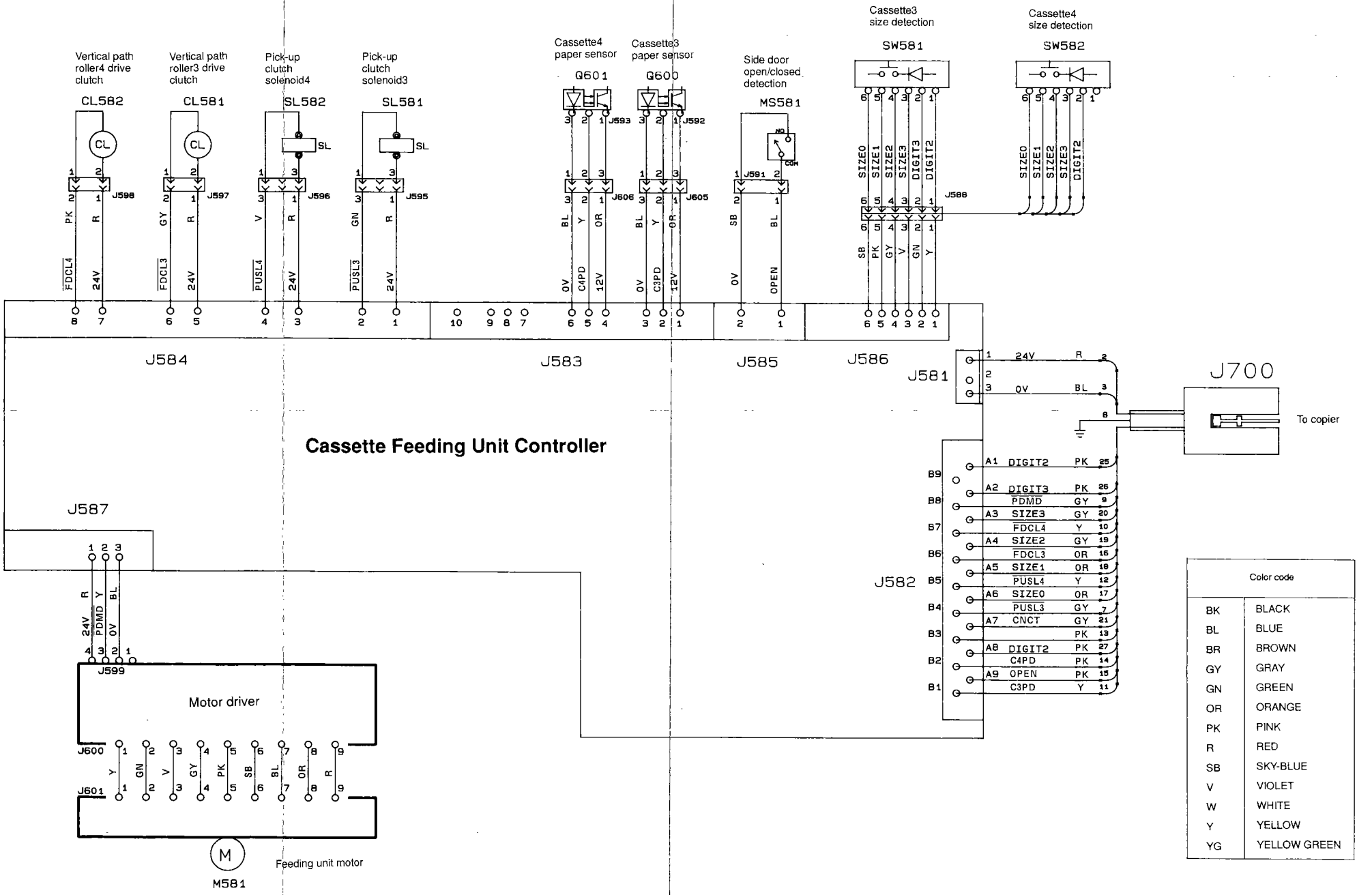
L. CASSETTE FEEDING UNIT-E1 GENERAL CIRCUIT DIAGRAM



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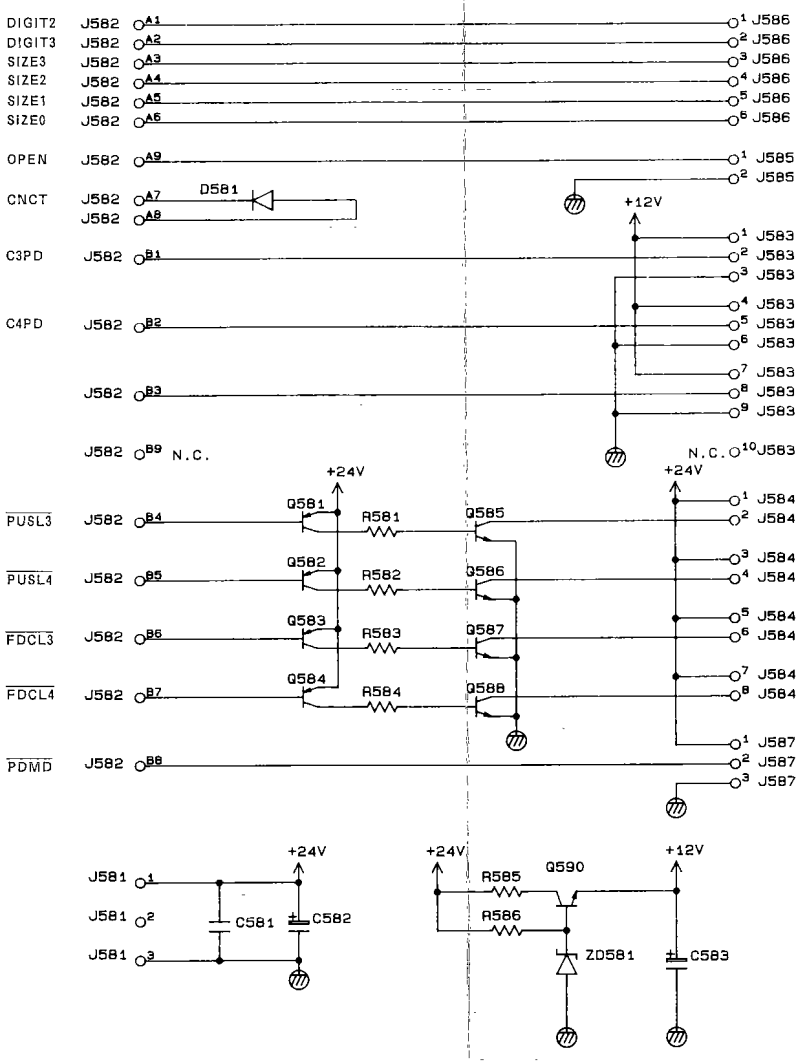

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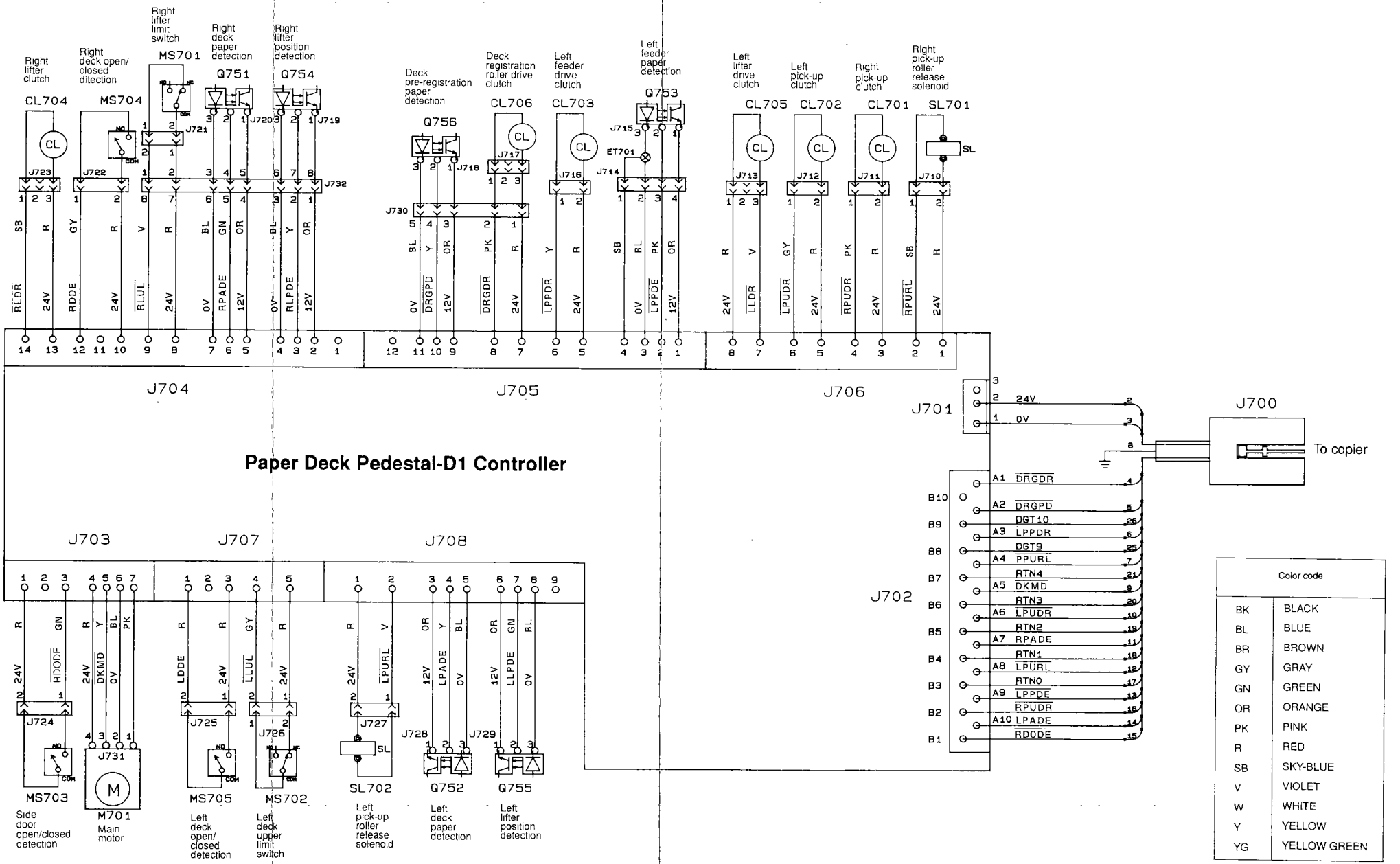
N. PAPER DECK PEDESTAL-D1 CIRCUIT DIAGRAM



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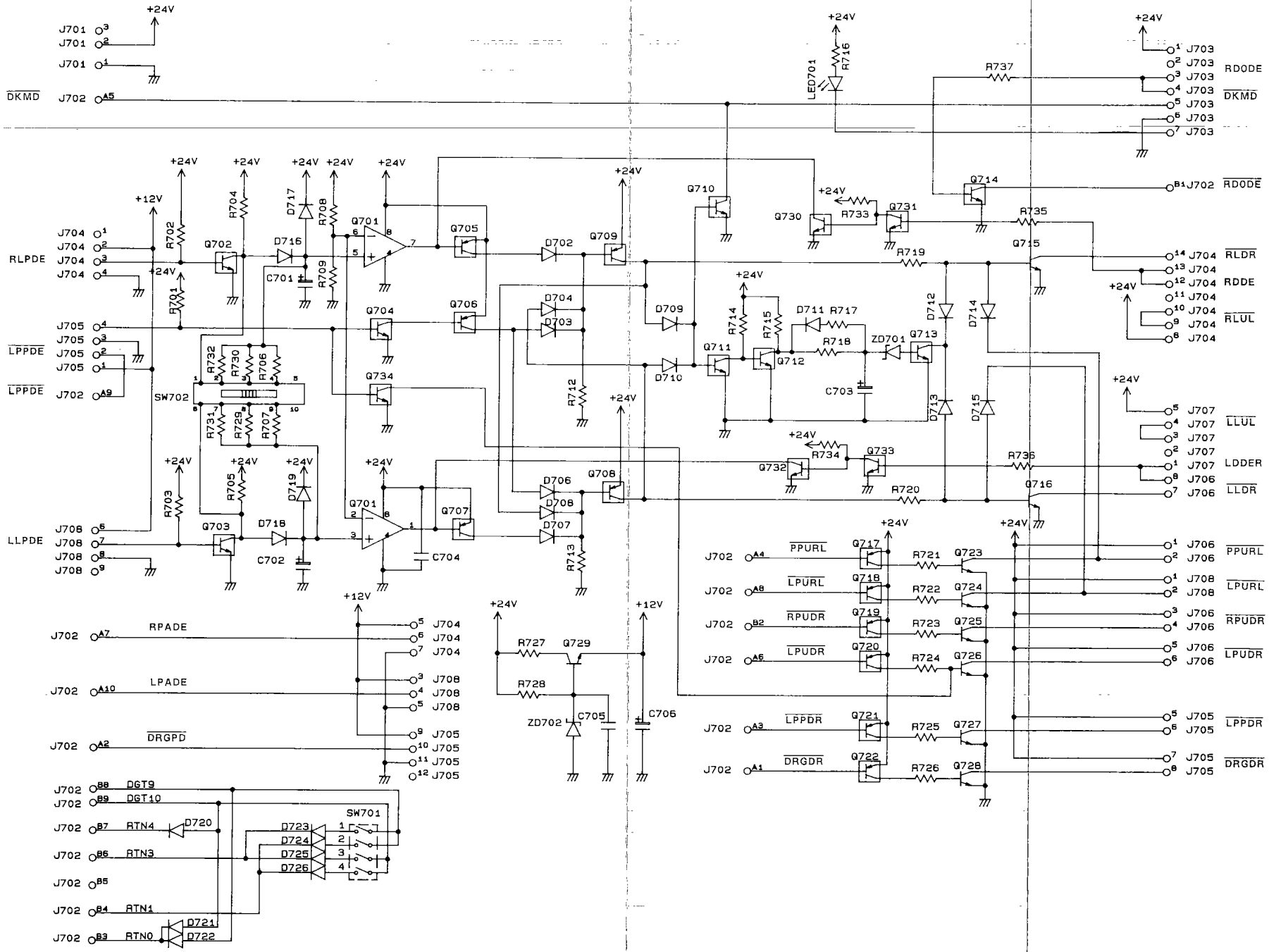

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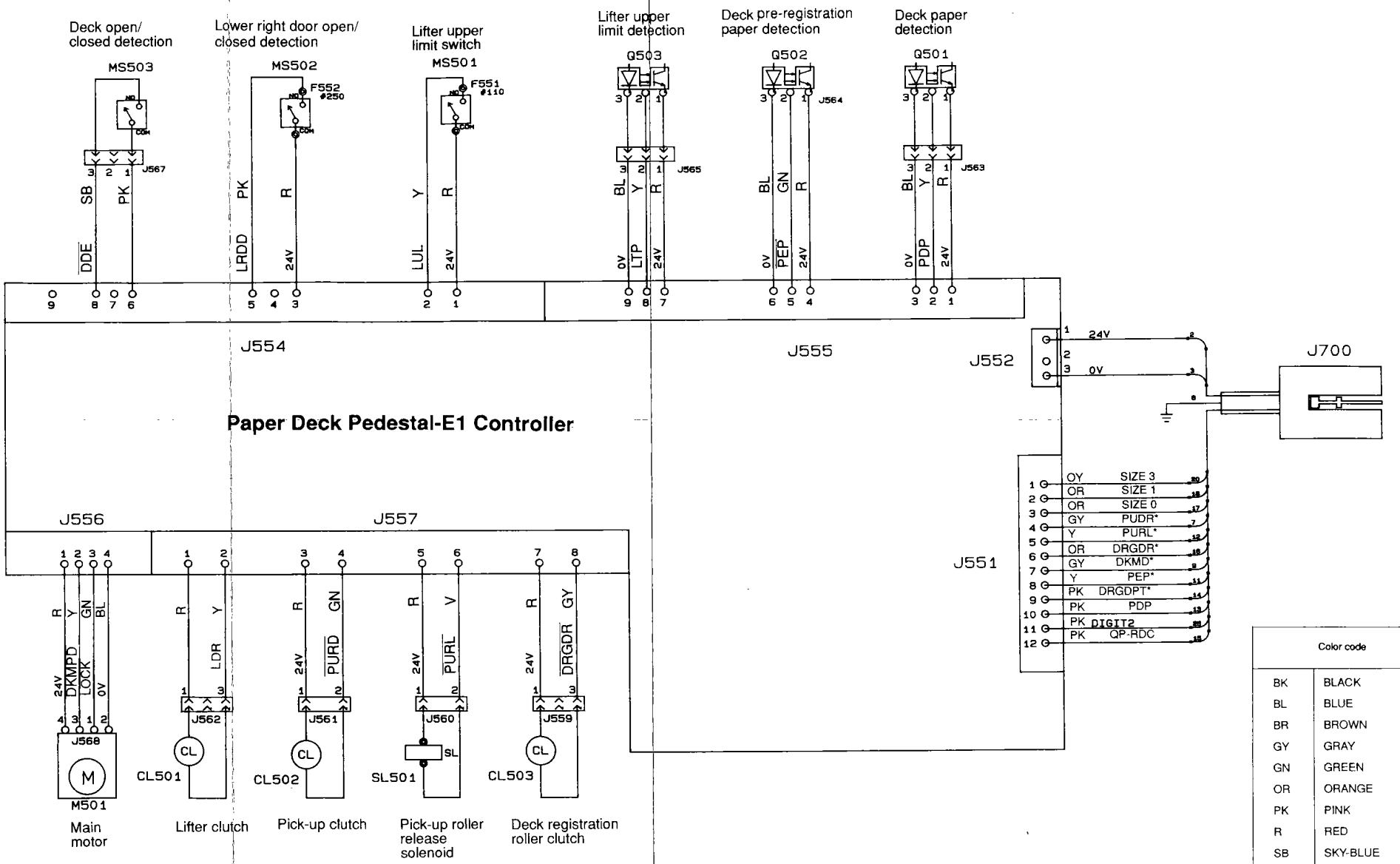
P. PAPER DECK PEDESTAL-E1 CIRCUIT DIAGRAM



Color code	
BK	BLACK
BL	BLUE
BR	BROWN
GY	GRAY
GN	GREEN
OR	ORANGE
PK	PINK
R	RED
SB	SKY-BLUE
V	VIOLET
W	WHITE
Y	YELLOW
YG	YELLOW GREEN

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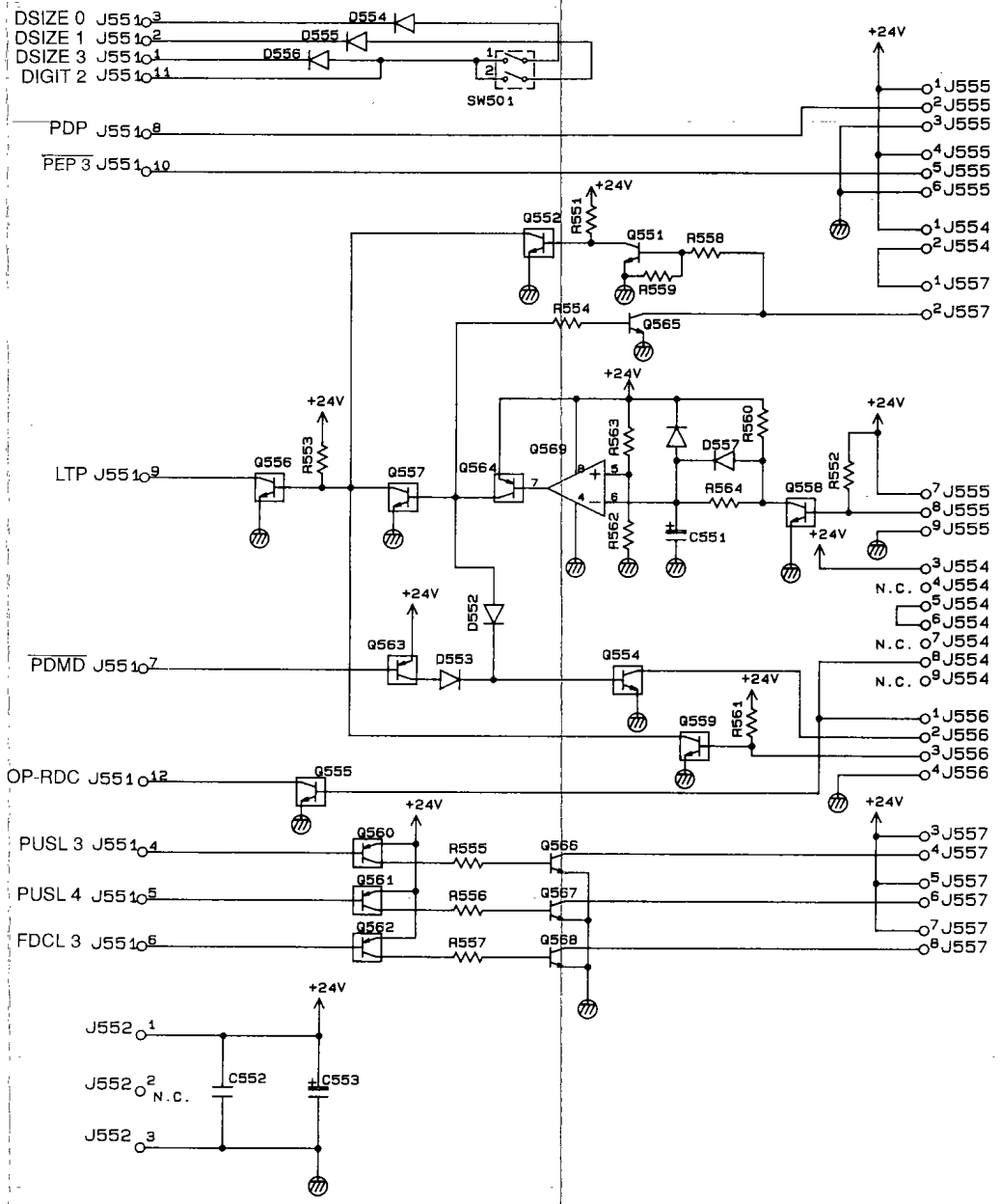

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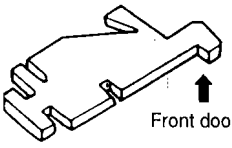
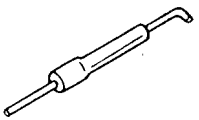
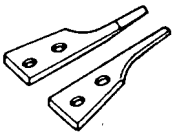
R. LIST OE SPECIAL TOOLS

The following are special tools used to service the copier; use them in addition the standard set of tools.

No.	Tool name	Tool No.	Shape	Rank	Remarks
1	Door switch actuator	TKN-0093		A	
2	Spring gauge	CK-0054		B	· For checking pressure of cassette spring. · For adjusting lens drive cable; 0 to 1500g.
3	Replacement blade for stop ring pliers	CK-0426		B	· For detaching grip ring; 4 ~ 9 mm.

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S. LIST OF SOLVENTS AND MATERIALS

No.	Name	Use	Chemical formula, mixture ratio, etc.	Source	Remarks
1.	Ethyl alcohol (Ethanol) Isopropyl alcohol (Isopropanol)	Cleaning copyboard, glass, mirror, etc	C_2H_5OH $(CHZ_3)_2$ CHOH	Locally	Flammable. Use in a well-ventilated area. Avoid breathing concentrated vapor.
2.	MEK	Removing toner or oil stains	$CH_3 \cdot CO \cdot C_2H_5$ Methylethyl ketone	Locally	Flammable. Use in a well-ventilated area. Avoid breathing concentrated vapor. Avoid contact with eyes or skin. Do not use for cleaning the drum, molded plastic parts, or corona wires.
3.	Heat-resistant grease	Lubricating the drive mechanisms; e.g.,copyboard driving gear, fixing drive gear, fixing ass'y, etc.		CANON	Tool No.: CK-0427 (500g/can) (Equivalent grease can be used, but should be able to withstand 200 C for extended periods of time.)
4.	Lubricating oil (low viscosity)	Lubrication points: Scanner rail, etc.		Locally	Tool No.: CK-0451 (100cc) Equivalent oil can be used: ISO VG 68 Oil ESSO Febis K68 MOBIL Vactraoil No.2 SHELL Tonna Oil T68
5.	Lubricating oil (low viscosity)	Lubrication points: One-way clutch in pick-up control unit		Locally	Tool No.: CK-0524 (100cc) Equivalent oil can be used: ISO VG 220 Oil ESSO Febis K220 MOBIL Vactraoil No.4

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